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THE

SANITARY CONDITION

AND DISCIPLINE

OF

INDIAN JAILS.

BY JOSEPH EWART, M.D.,

BENGAL MEDICAL SERVICE,

AUTHOR OF "THE VITAL STATISTICS OF THE EUROPEAN AND NATIVE ARMIES OF INDIA."

WITH PLANS.

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TO

DR. JOHN FORSYTH,

DIRECTOR GENERAL OF THE BENGAL MEDICAL DEPARTMENT,

WHOSE ADMINISTRATION,

DURING THE GREAT INDIAN MUTINY

AND THE OPERATIONS UNDERTAKEN FOR THE SUPPRESSION OF THE REVOLT,

WON FOR HIM

THE THANKS OF THE HOME AND INDIAN GOVERNMENTS,

AND

THE ADMIRATION OF THE MEDICAL OFFICERS OF THE BENGAL ARMY,

These Pages,

ON

THE HYGIENE, SANITATION, AND DISCIPLINE OF INDIAN JAILS,

ARE (BY PERMISSION)

RESPECTFULLY DEDICATED BY

THE AUTHOR.

PREFACE.

It has been the Author's constant care, in revising and enlarging the first twelve chapters of this volume—originally published in the *Indian Lancet*—to point out the various causes which produce the most appalling mortuary bills that are to be found among any class of human beings on the face of the civilized world, and to draw attention to the simple, and generally inexpensive means, that may be employed to prevent avoidable sickness and mortality, or to avert the conversion, annually, of thousands of minor into capital punishments.

In the remainder of the work, the Author has noticed (among other things) the serious shortcomings pervading the mode of discipline prevalent in the jails throughout India. He has also ventured—not without some diffidence, he readily confesses—to give the Outlines of a Scheme of Prison Discipline, suited for introduction into any new jails that may eventually be constructed, or even into any of the present ones capable of economical adaptation to the chief condi-

tions of the scheme, which, he believes, is based upon a combination of humane, natural, and philosophical principles.

The Author takes this opportunity to tender his grateful acknowledgments to Drs. Mouat and Hathaway, Inspectors-General of Prisons in the Lower Provinces of Bengal and the Punjab respectively; to Dr. Cornish, Secretary to the Director-General, Medical Department, Madras; and to A. Bettington, Esq., Inspector-General of Prisons, Bombay, for their kindness and courtesy in providing him with official reports and information which have proved invaluable to him.

Kherwarrah, March 6th, 1860.

CONTENTS.

		PAGES.
	INTRODUCTORY OBSERVATIONS	ix–xii
CHAP.		
I.	—ON THE SICKNESS AND MORTALITY AMONG INDIAN PRISONERS	1–38
II.	—ON THE RESPIRATORY ACCOMMODATION IN JAIL WARDS AND HOSPITALS IN INDIA, &c. . . .	39–47
III.	—ON VENTILATION	48–54
IV.	—ON DIETARIES	55–86
V.	—ON THE WATER SUPPLY	87–113
VI.	—ON THE CONSERVANCY ARRANGEMENTS . .	114–138
VII.	—ON DRAINAGE	139–143
VIII.	—ON DEODORIZING AGENTS	144–156
IX.	—ON THE EFFECTS OF LABOUR ON THE HEALTH OF PRISONERS	157–176
X.	—ON THE ABOLITION OF TOBACCO . .	177–195
XI.	—ON THE ABOLITION OF OPIUM-EATING . .	196–211
XII.	—ON THE CLOTHING OF PRISONERS . .	212–230
XIII.	—PRISON DISCIPLINE	231–275
XIV.	—SCHEME OF DISCIPLINE FOR INDIAN PRISONS .	276–309

APPENDIX.

	PAGES.
RULES FOR THE MEDICAL MANAGEMENT OF JAILS IN LOWER BENGAL	311–315
RULES FOR THE SUBORDINATE MEDICAL STAFF AND HOSPITAL ATTENDANTS OF JAILS IN LOWER BENGAL . .	315–317
RULES FOR CONVICTS TRANSPORTED TO ARRACAN . .	317–321
REGULATIONS FOR CONVICT SHIPS . . .	322–326
RULES FOR PRISONERS IN TRANSIT	326–327
RULES FOR THE DISPOSAL OF CHILDREN OF CONVICT MOTHERS	327–328
SHAVING OF PRISONERS IN BENGAL JAILS . .	328
RULES FOR MILITARY GUARDS IN JAILS . . .	328–331
RULES FOR THE MANAGEMENT OF PUBLIC JAILS IN THE MADRAS PRESIDENCY	332–346
MEDICAL OFFICERS' DUTIES IN PUNJAB JAILS . .	347–349
MISCELLANEOUS EXTRACTS	350

INTRODUCTORY OBSERVATIONS.

THE following pages contain many illustrations of the defective sanitary and hygienic state of Indian Prisons, together with suggestions for their amendment. One important recommendation has been reserved for prominent mention here. To go *in medias res*, it is simply as follows:—*The sanitary powers of the medical officer in charge of every jail ought to be augmented. The medical officer should be as supreme in all matters connected with* PREVENTIVE, *as he is now in respect to* CURATIVE MEDICINE.

The sanitary establishment, drawn from among the prisoners, and fixed by the Inspector-General of Prisons, should be placed under the *sole local control and management* of the medical officer, whose authority over it should be as absolute as that which he now exercises over his hospital establishment. There should be no conceivable room for doubt or misapprehension as to this condition, because the principle inculcated is essential to the successful operation of the scheme.

The duties of the sanitary body of every jail would

be as subjoined. To keep the wards, cells, hospital, yards, and adjoining grounds, in a thorough state of cleanliness; to maintain the necessaries and drains as free as possible from all filth; to see that the deodorizing agents employed are in constant working order; to remove, with the utmost promptitude, all decomposing animal and vegetable matter; to whitewash and purify the wards, cells, and hospital, whenever requisite; to take proper measures for the removal of dampness from the sleeping apartments, &c.; to attend to ventilation; to preserve the utmost cleanliness in the places appointed for bathing, as also in and near the wells and tanks from which the water, used for cooking and drinking, is drawn; to attend, with unremitting vigilance, to the filters, wherever they exist, with a view to insure their constant efficiency; in short, to attend, with precision and effect, to all matters calculated to preserve the purity of the jail water and atmosphere.

It is exceedingly difficult to discover the existence of a single valid objection to the adoption of the suggestion above advanced. That of expense cannot be urged; for the arrangement proposed would only involve the transfer of the individuals, now employed in a very unsatisfactory manner, for the purpose of preserving the cleanliness of the jails and their appendages from the civil officers in charge of the jails, to the medical officers, who are *nominally*, but not *really* responsible for the practical execution of sanitary measures. It may even be questioned whether the number

of hands that would be required by the sanitary officer, vested with full powers over his department, would be so great as that which is now used under present circumstances.

The existing system *confers an initiatory or recommendatory power* upon the medical officer, but vests all *real executive or directorial action* in the civil officer. The actual condition of the jails fully shows that, in practice, this plan is fatal to successful sanitary discipline, and that some radical change is imperatively necessary. Its chief result hitherto has been to cause the compilation of interminable, and annually repeated reports, mountains of correspondence, and an invisible minimum of executive action—always too late, generally misdirected or temporary, or subject to cessation or relapse into the normal state of passiveness, inactivity, or indifference, when the immediate necessity or pressure, in the shape of a decimating cholera epidemic, endemic fever, or destructive dysentery and diarrhœa, may have become diminished, or have temporarily disappeared.

But the plan, which I have in view, would curtail the expenditure of pens, ink, and paper, and what is of infinitely greater importance to a physician or surgeon, who has to keep pace with the rapid march of the medical intellect and literature of the day, it would lessen the waste of priceless, invaluable time, now frittered away in useless correspondence, which seldom leads to any permanent good results, and *guarantee the provision of a maximum of well-timed, well-directed, and prompt*

executive action, and that, too, with a minimum of expense and agency. In addition to special qualifications and knowledge, the medical officer, by virtue of his daily visits to the jail, is peculiarly fitted to turn the work of the sanitary establishment to the very best account. As satisfactory proofs that this has been accomplished, the perfection of the drainage and conservancy arrangements, the universal cleanliness of the cells, wards, hospital, &c., the constant sweetness of the jail atmosphere, the purity of the water, &c., and improvement of the general health of the criminals, as tested by a diminution of sickness and mortality, might be selected.

Thus might all the available resources of PREVENTIVE and CURATIVE MEDICINE be centred, in an effectual and economical manner, in the only officer officially connected with Indian jails qualified to unite the two with safety and success. Thus might the epidemic, endemic, and epizootic diseases, which play such havoc among the prisoners, be assailed at their sources by the responsible and systematic annihilation of the abominable fountains from which they spring and flow, subsequently to decimate the occupants of the prisons, or to be disseminated therefrom, with electric rapidity; to create panic, consternation, and appalling mortality among the industrial and productive constituents of the civil population.

INDIAN JAILS.

CHAPTER I.

ON THE SICKNESS AND MORTALITY AMONG INDIAN PRISONERS.

1. THE annual *sickness* among Indian criminals, in the three presidencies, exceeds the numerical strength. Perhaps, if the sick "remaining in hospital," at the termination of each year, had not always been added to the next year's account, the ratio of admissions would not have figured quite so high in the medical returns. But, if this slight vitiating error had not existed at all, there is reason to believe that, even then, the admissions would have approximated very closely indeed to the average strength during the year. A reference to the table, marginally noted,[1] will show that, during the 21 years, from 1833 to 1854, the *Mortality*, per 1,000 of strength, amounted to 72·5 in Bengal; that, during the 23 years, from 1831–32 to 1853–54, it

[1] Sickness and Mortality among prisoners, in India, from "All Diseases." TABLE I. in the Appendix.

amounted to 61·5 per 1,000 in Bombay; and, during the 10 years, from 1844 to 1853, to 61·3 in Madras. Thus, taking the presidencies, in the exact order in which they stand, it may be inferred that the periods necessary for the *entire annihilation* of the criminal population, undergoing imprisonment, has been about 14 years in the first, 16 years in the second, and 16 years in the third named presidency. From the same source, it will be observed, that the ratio of deaths to admissions into hospital is exceedingly high, indicating the prevalence of a low and unmanageable type of disease,—a type, in fact, which has hitherto been comparatively little amenable to the successful administration of remedies. The subjoined facts are given in support of this statement.

Presidency.	Deaths per 1,000 treated among Sepoys in—	Deaths per 1,000 treated among Europeans in—	Deaths per 1,000 treated among Prisoners in—
Bengal	14·7 (1)	32·1 (2)	58·6 (3)
Bombay	15·2 (1)	23·5 (2)	48·0 (3)
Madras	25·1 (1)	20·0 (2)	58·3 (3)

2. It may not be altogether uninteresting to compare minutely the sick and death-rates of Indian prisoners with those which have prevailed, at nearly corresponding

1 Table I. in the Appendix.

2 *Vital Statistics of the European and Native Armies in India.* Table II. p. 22 (1859).

3 Table II. in the Appendix.

periods, among the constituents of the native armies. The comparison will be useful, as well as instructive, inasmuch as it will afford an approximate illustration of the amount of sickness and mortality which may be designated as unavoidable on the one hand, or which may be assigned to the continual operation of removable causes on the other. The preponderance of disease and death, in proportion to given equals of souls, among prisoners contrasted with Sepoys, stands forth in prominent colours. The *actual excess* of admissions and deaths carried to the account of the former is demonstrated in the following statement compiled from Tables I. and II. in the Appendix.

Presidency.	*Excess* of Admissions per 1,000 of Strength.	*Excess* of Deaths per 1,000 of Strength.	*Excess* of Deaths per 1,000 Treated.
Bengal	258·3	58·1	43·9
Bombay	242·7	45·7	32·8
Madras	300·1	42·5	33·2

The unavoidable generalizations derived from these striking results, are—1st, that prisoners are much more subject to invasions of disease; 2ndly, that they succumb, much more frequently, to its inroads upon their constitutions, when once attacked, than Sepoys. But, though disease is more prevalent among the denizens of our Jails than among the native soldiers, it is not *chiefly* from the greater prevalence of disease that the former die off in such fearfully excessive numbers, but

from the non-amenability of the disorders, from which they suffer, to successful therapeutical management. It is, therefore, one thing to treat disease, as it manifests itself among the native soldiers. It is quite another matter to combat the maladies which affect, with such destructive powers, the criminals existing or vegetating in Indian Jails. In the former, disease is met with which, as a general rule, readily yields to the skilful and scientific exhibition of approved remedies. In the latter, though it may be encountered by the same kind of skill, and by the application of identically the same drugs, the treatment is, on an average for all India, *fully three and a half times less successful.*

3. The comparison above made, between two classes of fellow countrymen, does not, however, furnish positive, or exact results. There are differences in the circumstances of the two classes, which must never be lost sight of, in drawing conclusions from the comparative mortuary statistics of the Oriental prison, and military populations. Bearing this fact in mind, then, it becomes absolutely necessary to pourtray, with as much exactness as possible, those conditions which are acknowledged by all hands to raise the mortality and sickness in the one, and to lower them in the other. This has been attempted in the following arrangement:—

Condition of Criminals prior to incarceration.	*Condition of Men prior to enlistment.*
Previous to Imprisonment, the individuals who fill our Jails generally belong to the lowest classes of the community. They are	The candidates, who seek admission into the ranks of the native armies, generally belong to respectable families of the middle class of

habitually addicted to intemperance and dissipation. They are often subjected to extreme vicissitudes of temperature and weather, whilst precariously and irregularly fed, and inadequately clothed. They are often houseless, during the most inclement seasons of the year, and nomadic in their habits. They are frequently sufferers from intractable forms of malarious fevers, their consequences and sequelæ; from confluent small-pox and cholera. They belong to all ages, from twelve upwards; and include among their ranks the young, the middle-aged, and those who have progressed a goodly distance into the sear and yellow leaf of old age. From these causes and others, a certain percentage of criminals are predisposed to, or actually suffering from, disease before they are sentenced to confinement.

Condition of Criminals after incarceration.

Criminals in India, as in all countries, are more or less subjected to the depressing passions of despondency, despair, and melancholy; and the evil effect of these upon physical health is augmented by the general absence of reformatory discipline, of sufficient encouragement or rewards for good behaviour, and by the impossibility (with rare exceptions) of prisoners obtaining an abridgment of their periods of confinement, the community. They are habitually temperate, leading regular and orderly lives. They are very cleanly, by comparison, in their habits, performing their diurnal ablutions with a religiously scrupulous regularity. They are, for an Oriental climate, well housed, fed and clothed. They suffer less from the diseases of the country than those whose hands are constantly at war with society, and the laws of the land. They enter the army at from eighteen to twenty-two, when the natural expectation of life, or chances of longevity are known to stand favourably high, and are never admitted into the service, until they have been thoroughly examined and scrutinized in every possible way, by regimental medical officers. From these circumstances, native army life ought to manifest a high rateable value.

Condition of Sepoys after enlistment.

The Sepoys, after enlistment, are not subjected to the evil effects of the depressing passions. They know that they have entered a service, which promises a steady regulated system of promotion from lower to higher grades, each step being accompanied by a corresponding increment of emolument, personal dignity, and importance. They are carefully watched and protected by their officers. They know that their

however exemplary their conduct in Jail may be. The continued sense of disgrace and shame consequent on the mere fact of conviction and imprisonment, and the almost invariable practice of placing criminals in fetters or irons, whether undergoing in, or out-door labour, are additional causes, which co-operate in reducing the vigour of the nervous system below par. They are often crammed into imperfectly ventilated apartments, and are thus exposed to the evil consequences of association and overcrowding. Their clothing is generally insufficient to protect them from violent ranges of temperature. Their sleeping apartments are polluted by miscellaneous nuisances, committed during the night, especially in district prisons, where sufficient European Superintendence has not been provided. Their dietary is, in most instances, defectively constituted, badly arranged, and framed without proper regard being had to the existence of the carboniferous and nitrogenous principles in normal proportions, viz. in the relation of about three parts by weight of the former to one of the latter. Nor is there a properly graduating scale of food suited to length of confinement. There is also reason to believe, according to Dr. Bedford and Dr. Hathaway, that the peculation carried on by a native underling executive, not unfrequently detracts from the Service is respected, and looked up to, by their countrymen of all creeds and professions; and they ought to be, and I hope they are, generally, proud to belong to it. Hope, that grand stimulus to honourable rivalry and ambition, is ever uppermost in their minds. Rewards, honours and titles for distinguished merit, conspicuously decorating the seniors, are constant incentives to buoyancy of spirits, and to an invigorating status of the nervous system. The knowledge that superannuating pensions are provided by Government for the incapable (and for their families after their decease) tranquillizes their minds regarding their comfortable subsistence, when unfit for further service. They are well hutted, and (Bombay and Madras excepted) sleep separately in their houses in the cold season, and outside, in the open air, in the summer months. Their clothing is well adapted for a tropical climate. Their lines are kept scrupulously clean; the existence of cesspools, and other nuisances being interdicted by authoritative supervision. Their dietary is all that can be desired. They eat and drink what they have been accustomed to all their lives, and vary their food as appetite, inclination or pleasure may dictate. Their parades, though monotonous, are not very harassing, and may be compared to healthy recreative exercises. Their hospitals,

quantity, as well as the quality of the food allowed by regulation. The detachment of gangs of prisoners to execute public works, badly provided with clothing and house room, to unhealthy situations, and improperly attended, when sickness supervenes, by incompetent native doctors, is undoubtedly prejudicial to health and longevity. The Jail Hospitals are usually inadequate for the exigencies of the sick, and the clothing allowed is quite disproportioned to their wants, during the cold season; both of which combine to render nugatory all attempts at the successful management of thoracic and abdominal diseases. Change of air, for those persons whose lives might be saved by it, is almost always unprocurable. The drinking water is not always of the best kind. Jails are frequently located in malarious situations, and thorough sanitary measures too commonly neglected within and without their precincts. European drugs are generally replaced by bazar medicines. Helps for the sick are not liberally enough given, and when given, they are seldom trustworthy.

organized according to the regimental system, are, by comparison, commodious and pretty well ventilated by the natural method. Their diseases are treated with scrupulous care, by medical officers, who have been educated at British medical colleges; and no medicines or comforts are denied them. For the helpless and prostrated, comrades selected and approved by the patients themselves are invariably provided at the request of regimental surgeons. Change of air is always available for convalescence, whenever deemed essentially necessary. Cantonments, lines, and hospitals, if not always in the best localities, are much better attended to, in a sanitary sense, than Indian Jails. European medicines, however costly, are used for the sick. The dark shade to this favourable picture consists of escort duties, treasure parties, night guards, and war service. The Sinde and first China wars; the Punjab and Sutledge, and the first, and second Burmese wars were enacted during the period embraced in the comparisons which have just been made.

4. Thus, in comparing the previous history of prisoners with that of the military class, and also the condition of the former after confinement with that of the latter after enlistment, there is abundant evidence to show that we cannot, under existing hygienic, sani-

tary and dietetic arrangements, expect the sickness and mortality among the inmates of our jails, to stand so low as among the members of the native armies. It must, however, be admitted by those who are most competent to form a sound opinion on the subject, that by far the largest portion of the excessive sickness and mortality, among incarcerated criminals, is demonstrably *preventable.* It is impossible, in the present state of our statistical knowledge, to certify, with precision, the exact amount capable of being averted; but there is such a wide margin of difference, between the criminal and army rates of disease and death, that the assignment of the principal portion of it to the existence of remediable defects of hygiene, sanitation and diet is manifestly justifiable. Most of the disadvantages of the prisoners, as regards health and the chances of life, are so palpably artificial and unnecessary, that they may be easily removed by intrinsic means, without putting the State to any extra expense. The detailed consideration of the means to be employed for the prevention of disease and death, among Indian criminals, belongs to other divisions of this treatise. Any observations that might be made here, therefore, on the subject, would be superfluous.

5. *Jail and Civil Mortality in India contrasted.*— It to be lamented that we have no *really* trustworthy data at hand, wherewith to illustrate the death-rate of any single province, city, or village in India, owing to the absence of a *reliable* census of the population combined with a system of the registration of deaths. And

yet, without a faithful enumeration of the population, to be repeated, say decennially, together with a well-sustained plan of mortuary registrations (births and marriages should also be included), we can neither tell, with desirable accuracy, the social, moral and political progress, or retrogression—as the case may be—of the swarming millions among whom we dwell; nor can we arrive at more than a mere conjectural approximation as to the mortality ratios of the general population as a whole, or as split up into principalities, counties, districts, cities, towns and villages.[1]

6. Still, praiseworthy attempts have occasionally been made, with a view to estimate the probable death-rates of the civil community, notwithstanding the almost insuperable difficulties to be encountered. It is impossible for any one, who has not personally endeavoured to conduct statistical inquiries amongst the superstitious

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[1] The late Mr. Bedford recommended the entertainment of a Registrar General with three deputy Registrars and nine Sub-assistant Surgeons for the purpose of preparing a periodical Census in the Lower Provinces of Bengal, North-West Provinces, and Punjab. He proposed that "a Registrar General and his Deputies should, in concert with the Medical Board, superintend the preparation of a periodical Census; Registration of Deaths, Births, and Marriages; Vaccination, and all other Sanitary measures; the condition of Jails, Sudder Stations, Barracks and Cantonments, as far as relates to their Hygienic State; the preparation of Meteorological Observations; the systematic study of Epidemic, Endemic, and Epizootic disease; and the eliciting all information of Topographic and Statistical interest."—I. A., No. 1. Oct. 1853. *Suggestions for the Extension and Perfection of Vaccination, Simultaneously with the systematic study of Epidemic Disease in India.* By J. R. Bedford, Civil Assistant Surgeon, Ranipore Bauleah, Calcutta, 1851.

and ignorant native populace, to form a distinctly correct idea of the insurmountable obstacles to be combated. The most gigantic of all is the passive, if not active, resistance of the people themselves. The next in importance is the general untrustworthiness of the indigenous agency employed by individuals for the purpose of collecting the data from which conclusions are to be drawn. Second only to these may be mentioned the utter hopelessness of enlisting with an earnest right good-will the aid and support of the executive officials of Government—partly arising from the difficulty of convincing them of the great importance of accurate statistical inquiries, and partly from the fact that they are almost invariably so overwhelmed with the care of multifarious and responsible duties, that they have no time to spare for the active encouragement and stimulation of what they view as extraneous occupation.

7. There cannot be a doubt that much of the apathy, indolence, and untrustworthiness of the native agency, that must be used to obtain a correct census with a system of registration of Deaths, Births, and Marriages, would be dispelled, if Government would issue orders to officers in charge of districts to lend their authoritative countenance to Civil Surgeons, whilst endeavouring to collect statistical data. It may be stated, once for all, that, without the direct encouragement of Government, all attempts to procure trustworthy information, regarding the mortality ratio of the general civil population of this country, must henceforth, as they have been hitherto, be, to a considerable extent, unsuccess-

ful. "But, when the day comes round, on which the population of British India shall be methodically counted, and the census thus practically completed shall be rendered profitable to science and mankind, through the agency of Registrars General, for all the Presidencies, aided by a staff of efficient officers, then will statistics, applied to the general population of this country, be viewed as the mathematical expressions of great facts, and be the basis of gigantic generalizations. Until the Census of India is honestly begun and accomplished,—until we arrive at a very near estimate of the people's numbers, we must, I much fear,—when attempts are made to build up figures and pronounce the results of our calculations to the world, as facts—faithful and incontrovertible, look upon them either as microscopical approximations to the truth, or as telescopic exhibitions of error."—(*MS.* 1856.)

8. Notwithstanding the firm conviction, therefore, in my own mind, regarding the unsoundness of medical statistics referring to the civil and free population in India, it may not be out of order to place together here a few results, which have been designed to demonstrate the ratio of mortality amongst the community in situations widely separated from each other in this country. Without reference to chronological order, but according to the presidencies in which the observations have been made, I now proceed to the detail of these, and to a general comparison of them with the results which have been shown to obtain in our Jails.

9. Dr. Kenneth Mackinnon gives a table, at the end

of his work on *Public Health*, intended to exhibit the mortality of the Cawnpore district, during the year 1847. From this table, it appears that, out of a population estimated at 1,000,320, there were 7,043 deaths, or 7 per 1,000. (During the previous year (1846), it is stated by the same authority, on information derived from the Pension Paymasters, that pensioners died at the rate of 50, and their pensioned families at the rate of 30 per 1,000.) Mr. Bedford found that, during 10 months of 1851, the death-rate amounted to 36·1; during the whole of 1852, to 42·3; and during 8 months of 1853, to 24 per 1,000 of the free community of the town of Ranipore Bauleah, in Bengal Proper. The high attainments, indefatigable zeal and unflagging energy, no less than the well-known urbanity and courteousness of the late lamented Mr. Bedford form the best guarantee that no efforts were spared by him, in co-operation with the civil authorities, to arrive at the greatest possible accuracy. It was stated by the *Friend of India* of the 1st July, 1858, that, in Calcutta, the mortality among Hindoos amounted to 4·83, and among Mahommedans to 3·99 per cent., in 1857, giving an average of 44·1 per 1,000 of the young and old, males and females of the native community of at once the City of Palaces, and of Pestilences. The *Bombay Gazette*, finding from Dr. Leith's *Mortuary Report*, for 1857, that the deaths recorded as having occurred, in the town of Bombay, during that year, reached 18,162, by some unknown and mysterious proceeding, assumed the mortality to be 30 per 1,000, and calculated back

to ascertain the numbers of the people, which he made out to be 605,400. In this rate little confidence can be reposed. Dr. Hutchinson, in his admirable little work on *Indian Jails*, quoting from Mr. Thomson's *Prize Thesis*, furnishes a table which shows that the mortality in Madura and Dindigul, in the Madras presidency, was (the period is not mentioned) 16 and 11 per 1,000 of the population, respectively, — thus giving a mean average of 13·5 per mille.

10. By taking the averages of the Cawnpore, Ranipore Bauleah and Calcutta ratios, the assumed rate for Bombay; and the average of the Madura and Dindigul rates, and contrasting each average with that which has prevailed in the Jails of the presidency to which it belongs, as previously recorded, it will be found that the *actual excess* of mortality against the prisoners is—In Bengal, 41·8 per 1,000; in Bombay, 31·5 per 1,000; in Madras, 48·3 per 1,000. Now admitting that the mortality of the civil population has been under-estimated in the averages which have just been calculated, it will not be contended, I imagine, that it has been rated so much lower as the amount of excess here demonstrated against prisoners. No one who has made himself conversant with natives, their habits and customs, brought himself into constant contact with the highest and lowest of them, and been accustomed to bring the light of physiological and pathological science to bear upon them in health and disease, would ever assign a death-rate to the civil population, which would, practically, make the average duration of the lives of *one*

hundred and fifty millions of souls or more about *fifteen years*. Taking the town and rural peoples of India, there is reason to believe, that the mortality rate does not, on a general average, exceed 32 per thousand. (It may even be doubted whether it would stand so high as this.) According to this *assumed* rate, therefore, the *excess* of deaths per 1,000 of annual strength against the criminals as compared with the civil community would be — in Bengal, 40·5 per 1,000; in Bombay, 29·5 per 1,000; in Madras, 29·3 per 1,000—a very large amount indeed of preventable mortality.

11. *Indian Prison Mortality compared with English, Irish, and French Prison Mortality.*—If a comparison be made between the death-rates, which hold good in English, Irish and French prisons (allowance of course being made for a difference in the periods of observation), and those which have been awarded to prisoners in each presidency, the disadvantages under which the Indian criminals labour are forcibly illustrated. The annual mortality, per thousand prisoners, was—

During	4 years	(1853-57),[1] in English Convict Prisons and Hulks	15·0
„	4 „	(1854-57), in Irish Convict Prisons only. . .	44·0
„	11 „	(1847-57), in Milbank Prison	26·0
„	4 „	(1854-57), in Brixton Prison	15·0
„	2 „	(1847-52), in French Prisons and Hulks . .	65·5

Some of the British rates are remarkably favourable, and are well calculated to show how low the mortality can be reduced. In the English Convict Prisons and

[1] Exclusive of 1854.

Hulks, and in the Brixton Prison, it is actually 2·9 per 1,000 lower than it was in the Infantry of the Line Serving at Home, during the 10 years, 1837–46; 5·4 less than in the Foot Guards; and 2 than in soldiers serving in Canada and Nova Scotia. The Irish rate is very high, but very much lower than our Indian rates. Taking, however, the mean average of the English and Irish ratios, viz. 29 per 1,000 of strength, it will be found that the *excess* of mortality per annum against prisoners, in this country, is no less than — 43 per 1,000 in Bengal, 32 per 1,000 in Bombay, and 31·8 per 1,000 in Madras.

12. It is not a little remarkable to find that the death-rate in French Prisons and Hulks, in 1847 and 1852, was only 7 per 1,000 lower than that of Bengal, and that it positively exceeded the Bombay and Madras mortalities by 4 and 4·2 in the 1,000 respectively. It will be observed from the following extract taken from Colonel Jebb's *Report on the Discipline of Convict Prisons* for 1856 and 1857, &c. p. 77 (1858), quoted by the Colonel from Monsieur Berangeur's work, "*De la Répression Pénale*," &c. that the mortality in 1847, among French Prisoners of both sexes (and of all ages,) was no less than 71; and even in 1852, though amelioration is visible, it reached 60 per 1,000:—

"Il fut constaté, dans le rapport fait par la Commission de la Chambre des Pairs en 1847, qu'alors la mortalité, sur l'ensemble des individus qui y étaient enfermés, était parmi les hommes, de 1 sur 13·17, et parmi les femmes, de 1 sur 14·94, et il en existait

quelques-unes où cette mortalité était de 1 sur 7, et même de 1 sur 6."

"Il semblerait que depuis lors l'état sanitaire de l'ensemble de ces maisons s'est amélioré, si, du moins, il est permis d'en juger par la statistique que M. le Ministre de l'Intérieur à publiée pour l'année 1852, et qui a rapport à cette seule année. Dans cette année, en effet, sur 19,240 condamnés, des deux sexes, que renfermait la totalité de maisons centrales, il y avait eu 1,232 décès, ce qui ne serait que 6 pour 100."

13. *Comparison between the mortality of Indian Prisoners and the European Troops that have served in India.*—The only class, in this country, affording death-rates approaching those which prevail among criminals, is that of the Anglo-Indian Armies. But for the process of invaliding those who are "worn out," or rendered incapable of further service by the physical ills consequent on War and Disease, the mortality in these forces would approximate still more closely to our high prison-rates. If we take no note of the modifying influences of invaliding, the European Soldiers have not died in such large numbers, in proportion to given equals of strength, as our criminals. Thus the annual mortality per 1,000 European Soldiers, during

20 years (1832 to 1851-52), in Bengal, was, 64·1 .
25 „ (1828-29 to 1852-53), in Bombay, was 50·7 } Average, 48·9
10 „ (1842 to 1851-52), in Madras, was, 32·0 .

It follows, therefore, from what has been stated in para. 1, that the excess of mortality against prisoners over that which has obtained among Her Majesty's

Anglo-Indian Forces is—in Bengal, 8·4 per thousand; in Bombay, 10·8 per thousand; in Madras, 29·3 per thousand. The excess against the former, in all India, is no less than 21·8 per thousand—a mere fraction of a unit below the mean mortality-rate of the aged and the young, the male and female population of England and Wales.

14. It is a fact, pregnant with the greatest importance, and well deserving the consideration of a benevolent government, that, wherever I have turned to select material wherewith to compare the death-rates of Indian prisoners with those of the criminals in other countries, or with those of classes differently circumstanced, I have *almost* invariably had to demonstrate a marked preponderance of mortality against the violators of the laws of this country. It is true that the inequality of the conditions, under which many of these classes are situated, interferes, to a certain extent, with the mathematical preciseness or accuracy of the final results and inferences issuing out of a well-digested comparison of the statistics of each with those embracing Indian prison mortality. But it is equally true that, as in the comparisons which have been made, between the criminal and military and civil population, there exists in this inequality the strongest possible evidence to show that the *degree of it* is capable of very considerable modification. Even after allowing that there are differences which cannot be rendered amenable to the system of equalization, and permitting these to exercise their full influence in modifying and determining our conclusions, it is impossible not to acknow-

ledge the fact that there has always been a very large margin of preventable mortality among Oriental prisoners—indicating in emphatic language the wide-spread existence of flaws in the sanitary management of our jails, which are either capable of mitigation, or absolute eradication.

15. *Extremes of Mortality proof positive of Defective Sanitation.*—The remarkable variation in the rates of mortality in the jails, under the jurisdiction of the *Inspectors-General of Prisons*, is so great—in some instances so high, in others so low,—that there is no other way of accounting for such fluctuations than by referring them chiefly to inequalities of hygiene and sanitation. Dr. Hutchinson, quoting from the report of a medical officer, has shown that, in one Bengal jail, the mortality reached 276 per thousand, in the year 1829; and, in 1845, he observes that "a mortality of 25 per cent. is not unusual among convicts." According to this author, the greatest death-rate, in Bengal Proper, inclusive of the Dinapore Division, during 1843, was 277·8, at Purneah; the lowest, 6·2, at Baraset—the average, in 51 jails, having been 92·8 per thousand. During the same year, the maximum mortality, in the Upper Provinces, reached 236, at Paneeput, the minimum 4, at Khodagunge,—the average, in 49 jails, having been 68·4 per thousand. The remarkable fluctuations, in Bengal jails, are well illustrated in the four subjoined statements, for which I am indebted to Dr. Mouat's comprehensive reports for 1855–56, 1856–57, 1857–58, 1858–59.

List of Jails in the Order of Healthiness, 1855–56.

Prisons.	Mortality per 1,000.	Prisons.	Mortality per 1,000.
Cachar	—	Tipperah	69·04
Nuddeah	15·95	Sandoway	69·65
Howrah	19·66	Burdwan	71·27
Seebsaugor	21·90	Mymensing	76·77
Midnapore	21·91	Kamroop	78·82
Noakhally	23·81	Hazareebagh Pen.	82·71
Cossiah Hills	24·15	Cuttack	85·69
Baraset	27·62	Lohardugga	86·74
Bograh	29·25	Tirhoot	90·91
Furreedpore	30·16	Behar	92·26
Sylhet	30·63	Gowalparah	97·47
Patna	33·39	Beerbhoom	104·71
Jessore	33·89	Dinagepore	105·04
Nowgong	35·02	Alipore Life Pris.	105·57
Ramree	35·95	Chumparun	107·99
Singhbhoom	36·69	Sumbulpore	112·46
Chittagong	36·79	Akyab	112·75
Durrung	36·87	Hazareebagh	133·52
Bancoorah	40·81	Maldah	143·38
Balasore	43·08	Purneah	157·76
Maunbhoom	45·72	Rungpore	174·33
Pooree	51·81	Rajshahye	178·43
Dacca	52·49	Dargeeling	189·35
Pubnah	52·73	Monghyr	263·22
Sarun	55·88	Shahabad	290·04
Luckimpore	59·79	Moorshedabad	355·14
Backergunge	64·38	Bhaugulpore	402·48
Alipore Term Pris	68·62		

List of Jails in the Order of Healthiness, 1856 (Calendar Year).

Cachar	—	Moorshedabad, (after reduction)	35·29
Pooree	9·98	Maldah	40·13
Furreedpore	10·69	Patnah	42·15
Nuddeah	17·78	Sarun	46·51
Durrung	20·14	Pubnah	46·65
Ramree	20·28	Seebsaugur	47·06
Dargeeling	21·88	Dacca	47·60
Bograh	23·59	Debrooghur	49·63
Jessore	25·46	Nowgong	51·28
Cossiah Hills	26·42	Hazareebagh Penitentiary	54·10
Maunbhoom	26·84	Mymensingh	55·47
Balasore	33·48		
Noakhally	33·66		

Prisons.	Mortality per 1,000.	Prisons.	Mortality per 1,000.
Chittagong	57·87	Hazareebagh Jail	105·97
Burdwan	61·73	Sylhet	108·44
Tipperah	62·81	Beerbhoom	115·61
Kamroop	63·49	Gowalparah	122·55
Sandoway	64·05	Dinagepore	130·53
Cuttack	66·90	Behar	133·16
Purneah	69·30	Baraset	148·26
Backergunge	69·43	Alipore (Life Prison)	150·26
Midnapore	70·51	Akyab	155·93
Lohardugga	72·15	Rungpore	156·96
Singhbhoom	72·46	Hooghly	159·19
Howrah	74·29	Shahabad	162·79
Alipore (term Pris.)	74·78	Sumbulpore	176·24
Tirhoot	80·65	Monghyr	234·85
Rajshahye	82·52	Moorshedabad (before reduction)	244·18
Chumparun	83·09	Bhaugulpore	263·59
Bancoorah	91·77		

List of Jails in the Order of Healthiness during the Year 1857.

Maldah	11·74	Alipore	116·06
Noakholly	24·90	Kamroop	116·28
Chittagong	26·04	Chumparun	119·45
Cachar	27·78	Sarun	121·65
Jessore	30·87	Hazareebagh	125·79
Nuddeah	32·56	Pooree	130·43
Balasore	33·33	Monghyr	142·17
Sylhet	39·71	Moorshedabad	144·33
Seebsaugur	40·00	Dinagepore	156·28
Akyab	45·25	Patna	172·97
Tipperah	45·55	Cossiah Hills	185·18
Dacca	60·83	Midnapore	187·85
Ramree	61·64	Gowalparah	189·66
Nowgong	63·83	Dargeeling	204·54
Maunbhoom	67·23	Rungpore	210·65
Bancoorah	67·75	Hooghly	217·63
Burdwan	68·83	Sandoway	222·22
Backergunge	73·59	Sohardugga	225·81
Pubna	74·83	Rajshahye	230·62
Howrah	76·92	Bhaugulpore	283·02
Purneah	82·32	Behar	287·40
Sumbulpore	84·51	Durrung	357·14
Baraset	88·90	Mymensingh	417·48
Bheerbhoom	102·82	Shahabad	Record destroyed.
Tirhoot	102·82	Bograh	None.
Singhbhoom	104·00	Furreedpore	None.
Cuttack	107·84	Debrooghur	None.

List of Jails in the Order of Healthiness during 1858.

Prisons.	Mortality per 1,000.	Prisons.	Mortality per 1,000.
Dargeeling	24·4	Shahabad	87·9
Moorshedabad	24·9	Seebsaugur	90·1
Cachar	26·0	Mymensing	92·8
Nuddeah	28·1	Sarun	96·3
Noakhally	32·5	Bograh	96·6
Tipperah	32·6	Burdwan	102·5
Nowgong	36·2	Rungpore	104·5
Sylhet	37·9	Singhbhoom	121·7
Debrooghur	39·2	Gowalparah	125·0
Baraset	40·5	Purneah	126·9
Beerbhoom	43·4	Howrah	132·1
Jessore	45·5	Dinagepore	139·5
Cossiah Hills	45·5	Hooghly	149·6
Pooree	46·3	Maunbhoom	153·6
Maldah	47·6	Midnapore	160·4
Furreedpore	47·9	Rajshahye	163·3
Kamroop	49·1	Sandoway	165·9
Pubna	50·4	Cuttack	186·4
Tirhoot	51·3	Monghyr	187·2
Chittagong	54·3	Bhaugulpore	192·5
Bancoorah	58·8	Behar	202·0
Dacca	60·1	Ramree	213·2
Chumparun	62·9	Alipore	218·8
Durrung	63·6	Lohardugga	227·9
Backergunge	69·6	Sumbulpore	272·0
Patna	77·0	Hazareebagh	291·4
Balasore	80·0	Akyab	783·8

The following statement, compiled from Dr. Mouat's report, for 1855–56, gives the mortality per 1,000 of annual strength, during ten years (1846–55), in each of 54 Bengal jails; from which it will be observed that the mortality ratio has fluctuated from 24·5, at Noakhally, to 182·3 per 1,000, at Bhaugulpore.

Prisons.	Mortality per 1,000 strength.	Prisons.	Mortality per 1,000 strength.
1. Noakhally	24·5	6. Dacca	33·9
2. Furreedpore	27·7	7. Bancoorah	37·1
3. Mymensingh	28·4	8. Debrooghur	40·6
4. Baraset	31·9	9. Nowgong	42·6
5. Nuddeah	33·5	10. Cachar	43·7

Prisons.	Mortality per 1,000 strength.	Prisons.	Mortality per 1,000 strength.
11. Hazareebagh	44·1	33. Bograh	65·8
12. Midnapore	46·9	34. Backergunge	69·0
13. Sandoway	47·5	35. Bheerbhoom	69·0
14. Pooree	48·8	36. Russa	69·5
15. Cossiah Hills	48·9	37. Singhboom	77·6
16. Akyab	50·7	38. Chittagong	77·8
17. Purneah	51·2	39. Dinagepore	81·1
18. Pubnah	51·7	40. Moorshedabad	83·6
19. Durrung	52·7	41. Monghyr	84·2
20. Cuttack	53·6	42. Champarun	90·1
21. Tipperah	54·0	43. Behar	90·9
22. Jessore	56·2	44. Seebsaugur	97·6
23. Burdwan	57·7	45. Sohardugga	103·8
24. Balasore	58·3	46. Sumbulpore	104·5
25. Rajshahye	58·8	47. Dargeeling	105·9
26. Patna	59·5	48. Hooghly	106·2
27. Sarun	60·0	49. Rungpore	108·9
28. Alipore	60·1	50. Gowalparah	110·5
29. Howrah	61·3	51. Tirhoot	118·0
30. Ramree	64·4	52. Kamroop	118·7
31. Maldah	65·0	53. Maunbhoom	144·8
32. Shahabad	65·4	54. Bhaugulpore	182·3

It appears from Mr. Thornhill's reports that the highest death-rate, during the year 1852, was 187·5 at Deyrah Doon, the lowest 9·4 at Futtehpore,—the average, in 33 Jails, having been 45·6 per thousand; and again that, during 1853, the maximum was 161·9 at Bijnour, the minimum 6·9 at Bolundshuhur,—the mean average having been 60·5 per thousand in all the 33 Jails. Dr. Hathaway's lucid and comprehensive *Report on the Punjaub Jails*, for 1857, shows that, during this year, the highest ratio of mortality took place at Peshawur (240·1 per thousand), the lowest at Shahpore (3·0)—the mean rate, in 29 Jails, having been 66·7 per thousand. From Mr. A. Bettington's *Report on Bombay Jails* for the official year 1854–55, we learn

that out of 14 Bombay prisons, during 1853, the maximum mortality was at Broach (104·65)—the minimum, at Sattarrah (4·52 per thousand). It was shown by the Madras Medical Board, in their *Report on the Sanitary State of Madras Jails*, for 1854, that, during the 10 years ending 1853, the highest mortality was 237·5 at Negapatam, the lowest was 12 at Tellicherry,—the average ratio, in 33 Jails, having been 61 per thousand of annual strength.

16. Altogether apart from the excessive mortality, which has been found to prevail among Indian prisoners, as delineated in the foregoing pages, the very wonderful ranges, demonstrated in the tabular statements and text composing the preceding paragraph, are sufficient to show, to what extent death is favoured by the defective Sanitary State of many Oriental prisons, some of which were, down to the latest periods referred to,—indeed, are probably at this present moment,—pest-houses of the most fatal description. It is not to be supposed, for an instant, that I propose any of the above minimum ratios, as the standard capable of being approached by our efforts to effect equalization of the mortality. But, it may be submitted with confidence that the death-rate might speedily be reduced to, say 32 per thousand, on an average, for all India. When this has been accomplished, it will be time to consider how much lower it can be brought, by the practical development of a uniform and wide-spread system of sanitary reform. I am encouraged in entertaining the opinion, that it will be found still further capable of great diminution by

the fact that the criminals now incarcerated in the prisons of England die in much fewer numbers, in proportion to strength, than the "Infantry of the Line, United Kingdom, serving at home," or than the civil population of the same ages within the Registrar-General's bills of mortality! The mortality among the prisoners of England was, in 1850, 11·8 per thousand; that of the Infantry of the Line,[1] 18·7; and that of the general male population, of ages corresponding to those of the prisoners, 15·92 per thousand.

17. Those, who have not studied this subject, in all its bearings, will be surprised to learn, in round numbers, the amount of human life that has been silently sacrificed by preventable causes. From Table I., in the Appendix to this Chapter, it will be perceived that the total deaths, during the periods therein stated, in all the prisons of the three presidencies, amounted to 88,337, out of a strength of 1,248,093. But had the ratio of mortality been 32 per thousand, instead of 70·7, the aggregate of deaths would have been 39,971, whilst the saving of lives would have reached the prominent figure of 48,366 souls. Again, if the rate had been 25 per thousand, the total deaths would have amounted to 25,238,—thus leaving a prodigious margin of 63,099 lives saved!

18. *Increase of Sickness during recent periods of observation.*—It will be observed, by a reference to Table III. that, during the 10 years ending 1842, the

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[1] Vide *Report of the Sanitary Commissioners.*

sickness per 1,000 prisoners was 1138·1, whilst, during the 10 years ending 1852-53, it rose to 1314·5, in Bengal; that, during the 11 years ending 1841–42, the ratio of sickness to strength amounted to 1258·3, whereas, during the 11 years ending 1852–53, it rose to 1262·4, in Bombay; that, during the 10 years ending 1853, the ratio was 1050·8, but in 1856, it reached 1,169 in the Madras Presidency. The increment of recorded admissions into hospital has, therefore, been universal in recent times.

19. *Marked decrement of Mortality during recent times, in two presidencies, entirely effected by a diminution of mortality to admissions.*—But notwithstanding the general augmentation of disease, or at all events the entire want of proof of its decrement in any one presidency, viewed in the aggregate of all its prisons taken together, it is satisfactory to note, in the annexed statement, extracted from Table III., a decrease in the mortality among prisoners in Bengal, amounting to no less than 18·1 per thousand of strength; and, in Madras, to 12·3, during the recent periods of review. The fact appears to be that, as in the European and Native Armies,[1] the reduction of mortality among the prisoners in the Bengal and Madras Presidency has been solely effected by improvements in the methods employed for the cure of disease.

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[1] *Vital Statistics of the European and Native Armies in India.*

Presidency.	Periods.	Ratio of Deaths, per 1,000 of	
		Strength.	Admissions.
Bengal	1833 to 1842	81·8	71·9
	1843 to 1852–53	63·7	48·4
Madras	1844 to 1853	61·3	58·3
	1856 only	49·0	41·9
Bombay	1831–32 to 1841–42	54·7	43·4
	1842–43 to 1852–53	68·4	54·1

Why there should be revealed, during the recent period, in the western presidency, an increment of mortality, to the extent of 13·7 per thousand, is difficult to explain. It is, however, one of those stubborn facts which may possibly be open to explanation. About the commencement of the second or recent period, the notoriously insalubrious province of Sinde was conquered by Sir Charles Napier, and annexed by the Government of India. It is not improbable that the medical records of the jails of this principality may indicate a much higher mortality ratio than the average of the other jails in the Bombay Presidency, and accordingly account for a portion of the increment. It may, however, be questioned whether the Sinde ratios of death will be sufficient to explain, *in toto*, an augmentation, which alone is only 1·3 per 1,000 below the rate that prevailed in the prisons and hulks of England during the four years of 1853, '55, '56, and 1857, and only three-quarters of a unit per 1,000 lower than the mean ratio of the Native army of Bengal, during the 20 years ending 1852–53.

20. *Effect of Age on Mortality among Prisoners.*—It is a well-known fact, deduced from statistical investigations, that the mortality among the ranks of the Anglo-Indian Army increases in the direct ratio of increasing years. The same rule applies to the Civil and Military Officers of Government. The increased rate rises more quickly than it would if these classes were located in their native country. The general law is strongly upheld among criminals. That is to say, that age affects mortality much more than it would do, if the prisoners were more auspiciously circumstanced. It appears from Table IV., that between the ages of 15 and 20, the mortality among prisoners amounts to 41, whilst from 20 to 25 it reaches 38 per 1,000 of annual strength. It may be inferred from this apparently exceptional instance to the law which has just been enunciated, that those criminals, who are emerging from the confines of boyhood, and approaching the verge of manhood, are less competent to bear up against the unnatural circumstances connected with imprisonment, than those who have arrived at a more mature period of life. But, after the age of 25, the death-rate increases with advancing age, in rapid progression, even at periods (from this age up to 35), when the natural expectation of human life, in most civil communities, is very great. Between 25 and 30, the mortality is 47; 30 and 35, 52; 35 and 40, 63; 40 and 45, 67; 45 and 50, 72; 50 and 55, 78; 55 and 60, 93; and above 60, it rises to 148 per thousand.

21. It is within the limits of possibility, if not,

indeed, of probability, that a too strict adherence to the practice of administering the same degree of punishment to persons convicted of the same minor offences, regardless of the varying ages of the criminals, may have something to do with the very high ratios of mortality at the different periods of life. The preceding paragraph furnishes ample evidence to show that, if it be the duty of the judicial authorities to award equal punitive sentences for equal crimes, they cannot do this with any claim to consistency, without taking into serious consideration the ages of the violators of the public safety. To be explicit, I will select, for the sake of example, two criminals who have committed a common theft—the one being 20, the other 60 years of age. To sentence the latter individual to identically the same degree of punishment as the former, is simply to make it operate with nearly fourfold greater severity upon the aged (and it may be infirm) than upon the young and robust criminal, and to defeat the very object the Judge had originally intended to accomplish, in passing sentence, viz. *the administration of a measurable equality of punishment for a measurable equality of crime.*

22. *Effect of Length of Confinement on Mortality in Indian Jails.*—From Table V. we learn that the highest mortality is among short-termed prisoners. During the eight years ending 1856, in the Madras Presidency, the mortality, per thousand of strength, reached 70·2, in those imprisoned for a term under and not exceeding one year; in those imprisoned, from 1 to

2 years, it amounted to 68; from 2 to 3 years, to 61; from 4 to 5 years, to 50; from 5 to 6 years, to 46; from 6 to 7 years, to 42; from 7 to 10 years, to 57; from 10 to 15 years, to 46; from 15 to 20 years, to 48; and from 20 and upwards, to 65. The reason why the death-rate rises somewhat in the inverse ratio of the period of confinement is undoubtedly owing to the extreme suddenness with which these persons are transferred from their congenial lives of mental activity, liberty, variety, excitement, and comparative ease, to incarceration characterized by mental inactivity, strict confinement with fetters, monotony, melancholy, depression and despair, and unremitting employment. Nor must we omit to take into account the abrupt exchange of a dietary and stimulating potions, &c., indulged in at will, or as opportunities offer, for a prison diet often insufficient, devoid of the accustomed spirituous element, and altogether destitute of that variety and due arrangement of the carboniferous and nitrogenous principles, so essential to the preservation of health. After a certain period of confinement has been passed, there is more uniformity in the ratios of mortality than might have been expected. This is, in all probability, owing to the prisoners becoming gradually inured, by the accommodating and moulding powers of the human constitution, to the altered circumstances under which they have been placed. Those conditions, which were, at first, most fatal to life, become, by degrees, less so, as the newly-formed habits and occupations, enforced by prison regulations, become more and more a matter of

routine. Habit, so far as is practicable, in this instance, becomes second nature.

23. *Sickness and Mortality among Convicted Criminals, Prisoners waiting for Trial, and Civil Debtors.*—The sickness is greatest among "convicted criminals," next, among "prisoners waiting for trial," and least of all among "civil debtors." (*Vide* Table VI.) Taking into consideration the fact that the admissions per thousand of strength amounted to 1,124 in the first, 486 in the second, and 246 in the third class, one would not certainly have expected, from *à priori* reasoning, that there would have been such comparative uniformity, in the mortality, as is represented by the ratios of 61, 57 and 56 per 1,000 of strength. The mortality is highest, it is true, among the convicted, but it is only 4 and 5 lower among the untried and civil debtors. The reason why the untried and civil prisoners die nearly in as large numbers as the convicted offenders may be ascribed to the injurious influence of all those conditions (fetters and labour excepted), which have been reported to operate disadvantageously upon the lives of short-term prisoners.

24. *Principal Diseases from which Mortality results among Indian Prisoners.*—By far the largest proportion of mortality among Indian prisoners is produced by (1) Fevers; (2) Bowel Complaints (dysentery and diarrhœa); (3) Cholera; and (4) Phthisis. No less than 589·25 of the deaths per 1,000 of the total deaths, from all causes, in Bengal; 647·1 in Bombay; and 639·92 in Madras; and 42·72, 39·80, and 38·85 of the

deaths per 1,000 of annual strength (taking the Presidencies in the order just given), have occurred from these *four* groups of disease. It is true, that a very large number of fatal issues are recorded under the head "Other Diseases;" but it may be stated with confidence that, were the causes which produce so much disease and death, from the four classes of disease just mentioned, considerably mitigated, or rendered absolutely inoperative for evil, the casualties, resulting from "other diseases," would become proportionately and simultaneously diminished. (*Vide* Table VII.)

25. *Principal Diseases from which Mortality results among Native Soldiers and Prisoners contrasted.*—The same diseases which produce such fearfully wide gaps among the incarcerated population in this country lead to the largest portion of the aggregate mortality in the ranks of the Native armies in the three Presidencies. The difference consists merely in the intensity of these diseases, as manifested in the two classes—not in their kind or nature. Thus, Fevers, Bowel Complaints, Cholera, and Phthisis account for 610·15 per 1,000 of the deaths to total deaths from all causes, in Bengal; 650 in Bombay; and 653·16 in Madras; and for 8·77, 10·26, and 12·32 per 1,000 of the deaths to strength in each Presidency, respectively, among the members of the Native armies. (*Vide* Table VIII.) Though, therefore, the causes of mortality are identically the same, the intensity of the action of these causes, as demonstrated by the respective ratios of deaths to strength varies very considerably in the two classes.

The following statement, compiled from Tables VII. and VIII., is calculated to bring this truth to view in a striking manner:—

Relative Proportion of Mortality, from the undermentioned Diseases, among Prisoners and Sepoys.

——	Bengal.		Bombay.		Madras.	
	P.	S.	P.	S.	P.	S.
Fevers	2·14	1	2·3	1	1·5	1
Dysentery	14·70	1	6·4	1	8·0	1
Diarrhœa	11·00	1	9·0	1		
Hepatitis	16·60	1	3·0	1	No data.	
Cholera	4·80	1	4·7	1	2·0	1
Phthisis	6·20	1	1·5	1	No data.	
Other diseases	5·10	1	3·9	1	3·5	1

The mortality to strength is, therefore, 14·7 times as great from dysentery, 11 times as high from diarrhœa, and 16·6 times as great from hepatitis among Bengal Prisoners as among Bengal Sepoys. In all the three Presidencies the chances of longevity are much in favour of the Sepoy. A large margin of preventable mortality, even after admitting that the death-rates in the Native troops have been, to a certain extent, under-estimated, is surely presented here. Very nearly the whole of the excess set down against the prisoner was avoidable, removable, or mitigable, by the introduction of thorough improvements of sanitation, hygiene, and diet, &c.

26. It is repeated, then, that there is no real or radical difference, in the nature of the causes of death, in these two groups of fellow-countrymen. The great

difference exists in the widely varying circumstances and conditions, under which they are situated. The situation of the Criminal is such that, from the very nature of things as they are, his life is almost invariably endangered,—too commonly sacrificed by incarceration in most Indian Prisons. The Sepoy is so circumstanced that, except in times of War, or in other exceptional instances, every available means, which science and art can afford him, are furnished for the preservation of his health and life. In the former case, disease occurs, in such an aggravated form, that Medical Treatment is too frequently attended with but very poor success; in the latter it invades the constitution in such mildness of type that the exertions of the physi cian are infinitely more encouraging. Simply because the physical powers, whilst resisting the encroachments of disease, aid the action of medicinal remedies, and thus prove the best friend to the patient, and the most desirable adjuvant to the medical practitioner.

APPENDIX.

TABLE I.—*Exhibiting the Sickness and Mortality from "All Diseases," among Native Prisoners in Bengal*[1] *for* 21 *years, in Bombay*[2] *for* 23 *years, and in Madras*[3] *for* 10 *years.*

PRESIDENCY.	Periods.	Strength.	Admissions.	Deaths.	Ratio per 1,000 of—		
					Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
Bengal	1833 to 1854	1,053,825	1,302,249	76,404	1,235·7	72·5	58·6
Bombay	1831–32 to 1853–54	1,26,587	1,62,259	7,784	1,281·8	61·5	48·0
Madras	1844 to 1853	67,681	71,124	4,149	1,050·8	61·3	58·3
Average...	... ...	1,248,093	1,535,632	88,337	1,230·2	70·7	57·5

TABLE II.—*Exhibiting the Sickness and Mortality from "All Diseases," among the Sepoys of the three Presidencies.*

PRESIDENCY.	Periods.	Strength.	Admissions.	Deaths.	Ratio per 1,000 of—		
					Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
Bengal[4]	1833 to 1852–53	2,025,534	1,989,909	29,277	977·4	14·4	14·7
Bombay[5]	1831–32 to 1853–54	7,35,967	7,64,811	11,643	1,039·1	15·8	15·2
Madras[6].....	1842 to 1851–52	6,45,263	4,84,427	12,190	750·7	18·8	25·1
Average...	... ...	3,406,764	3,239,147	53,110	947·8	15·5	16·3

[1] *Indian Annals of Medical Science*, No. 7, October, 1856.

[2] *Ibid.* No. 5, April, 1856.

[3] *Report on the Sanitary Condition of Madras Jails.* By the Medical Board. (1856.)

Indian Annals, No. 7.

[4] *Ibid.* No. 5.

[5] *Vital Statistics of the Madras Army.* By Edward John Waring. *Indian Annals*, No. 5.

TABLE III.—*Exhibiting the Sickness and Mortality, during two distinct Periods, amongst the Prisoners of the three Presidencies.*

PRESIDENCY.	Periods.	Strength.	Admissions.	Deaths.	Ratio per 1,000 of— Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
Bengal[1] ...	1833 to 1842	4,78,535	5,44,636	39,190	1,138·1	81·8	71·9
	1843 to 1852–53	5,14,808	6,77,741	32,813	1,314·5	53·7	48·4
Bombay[2]...	1831–32 to 1841–42	51,002	64,179	2,790	1,258·3	54·7	43·4
	1842–43 to 1852–53	70,159	88,569	4,799	1,262·4	68·4	54·1
Madras[3]...	1844 to 1853	67,681	71,124	4,149	1,050·8	61·3	58·3
	1856 only	6,755	7,897	331	1,169·0	49·0	41·9

TABLE IV.—*Exhibiting the Effect of Age on the Sickness and Mortality, among Prisoners, in the Madras Presidency,[4] for eight years ending* 1856.

AGES.	Strength.	Admissions.	Deaths.	Ratio per 1,000 of— Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
From 15 to 20 yrs.	2,547	2,986	105	1,172·0	41·0	35·0
„ 20 „ 25 „	6,398¾	6,811	248	1,064·0	38·0	36·0
„ 25 „ 30 „	9,250	10,231	437	1,106·0	47·0	42·0
„ 30 „ 35 „	8,592¼	9,708	447	1,129·0	52·0	46·0
„ 35 „ 40 „	8,174¼	8,820	518	1,079·0	63·0	58·0
„ 40 „ 45 „	5,404¾	5,311	366	982·0	67·0	68·0
„ 45 „ 50 „	4,054¼	3,636	293	896·0	72·0	80·5
„ 50 „ 55 „	2,419	2,117	189	875·0	78·0	89·0
„ 55 „ 60 „	1,706¾	1,397	160	818·0	93·0	114·0
Above 60 years	1,282¼	1,148	191	895·0	148·0	166·0
Average.....	49,829¼	52,165	2,954	1,046·0	59·0	56·0

[1] *Indian Annals*, No. 7. [2] *Ibid.* No. 5.

[3] Waring's *Statistics of the Madras Army. Op. cit., &c.*

[4] *Medical Board's Report on the Sanitary Condition of the Jails in the Madras Presidency, for the year* 1856.

TABLE V.—*Exhibiting the Influence of Length of Confinement on the Sickness and Mortality, among Prisoners, in the Madras Presidency,*[1] *for the eight years ending* 1856.

PERIODS.	Strength.	Admissions.	Deaths.	Ratio per 1,000 of—		
				Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
Under 1 year ...	17,371½	19,853	1,220	1,144·0	70·2	61·0
From 1 to 2 yrs.	5,000	6,018	341	1,203·0	68·0	56·0
„ 2 „ 3 „	2,855¾	3,302	169	1,156·0	59·0	51·0
„ 3 „ 4 „	2,316¼	2,652	143	1,145·0	61·0	53·0
„ 4 „ 5 „	2,380¼	2,592	119	1,089·0	50·0	45·0
„ 5 „ 6 „	1,813	1,909	85	1,052·0	46·0	44·0
„ 6 „ 7 „	4,048¾	3,534	173	873·0	42·0	48·0
„ 7 „10 „	3,618¼	4,086	209	1,129·0	57·0	51·0
„ 10 „15 „	9,176¾	7,275	447	792·0	46·0	58·0
„ 15 „20 „	820¼	600	40	731·0	48·0	66·0
Above 20 years	428½	344	28	803·0	65·0	81·0
Average.....	48,829¼	55,165	2,954	1,046·0	59·0	56·0

TABLE VI.—*Exhibiting the Sickness and Mortality, in three Classes of Native Prisoners, in the Madras Presidency,*[2] *during ten years ending* 1853.

CLASSES.	Strength.	Admissions.	Deaths.	Ratio per 1,000 of—		
				Admissions to Strength.	Deaths to Strength.	Deaths to Admissions.
Convicted Prisoners	60,640	68,191	3,745	1,124·0	61·0	54·0
Prisoners waiting for Trial	4,983¾	2,425	288	486·0	57·0	118·0
Civil Debtors.....	2,057½	508	116	246·0	56·0	228·0
Average	67,681¼	71,124	4,149	1,050·0	61·0	58·0

[1] *Op. cit.*

[2] *Op. cit.*

TABLE VII.—*Exhibiting the Mortality, resulting from six Principal Diseases, and "Other Diseases," among the Prisoners in the three Presidencies.*

DISEASES.	BENGAL.[1]					BOMBAY.[2]					MADRAS.[3]				
	Period.	Strength.	Deaths.	Ratio of Deaths per 1,000 of total Deaths.	Ratio per 1,000 of Deaths to Strength.	Period.	Strength.	Deaths.	Ratio of Deaths per 1,000 of total Deaths.	Ratio of Deaths per 1,000 of Strength.	Period.	Strength.	Deaths.	Ratio of Deaths per 1,000 of total Deaths.	Ratio per 1,000 of Deaths to Strength.
1. Fevers	1833 to 1854.	1,053,825.	11,539	151·03	10·95	1831–32 to 1853–54.	1,26,587.	1,664	213·77	13·14	1844 to 1853.	67,681.	303	73·03	4·47
2. Dysentery			15,370	201·17	14·59			936	120·24	7·39			425	102·43	6·27
3. Diarrhœa			7,430	97·24	7·06			964	123·84	7·63			725	174·75	10·72
4. Hepatitis			167	2·18	0·15			85	10·92	0·68			...	...	...
5. Cholera			9,236	120·88	8·76			1,384	177·81	10·94			1,023	246·57	15·12
6. Phthisis			1,446	18·93	1·37			89	11·44	0·71			179	43·14	2·65
7. Other Diseases			31,216	408·57	29·62			2,662	341·98	21·02			1,494	360·08	22·65
Total		...	76,404	1,000·00	72·50		...	7,784	1,000·00	61·50		...	4,149	1,000·00	61·30

[1] *Indian Annals*, No. 7. [2] *Ibid.* No. 5. [3] *Medical Board's Report on the Sanitary Condition of Madras Jails, for* 1856.

TABLE VIII.—*Exhibiting the Mortality resulting from six Principal Diseases, and "Other Diseases," among the Sepoys of the three Presidencies.*

Diseases.	Bengal.[1]					Bombay.[2]					Madras.[3]				
	Period.	Strength.	Deaths.	Ratio of Deaths per 1,000 of total Deaths.	Ratio of Deaths per 1,000 of Strength.	Period.	Strength.	Deaths.	Ratio of Deaths per 1,000 of total Deaths.	Ratio of Deaths per 1,000 of Strength.	Period.	Strength.	Deaths.	Ratio of Deaths per 1,000 of total Deaths.	Ratio of Deaths per 1,000 of Strength.
1. Fever	1833 to 1852–53.	2,025,534.	10,452	356·76	5·11	1831–32 to 1853–54.	7,35,967.	4,071	349·66	5·53	1842 to 1851.	6,45,263.	1,861	152·66	2·88
2. Dysentery			2,006	68·47	0·99			853	73·27	1·15			1,360	111·57	2·10
3. Diarrhœa			1,314	44·85	0·64			624	53·59	0·84					
4. Hepatitis			194	6·63	0·09			156	13·39	0·22			101	8·29	0·15
5. Cholera			3,665	125·09	1·81			1,691	145·24	2·29			4,741	388·93	7·34
6. Phthisis			439	14·98	0·22			329	28·26	0·45			...	...	...
7. Other Diseases			11,227	383·22	5·54			3,919	336·59	5·32			4,127	338·55	6·39
Total	...		29,297	1,000·00	14·40	...		11,643	1,000·00	15·80	...		12,190	1,000·00	18·86

[1] *Indian Annals*, No. 7. [2] *Ibid.* No. 5. [3] Waring's *Vital Statistics of the Madras Army. Indian Annals*, No. 7.

CHAPTER II.

ON THE RESPIRATORY ACCOMMODATION IN JAIL WARDS AND HOSPITALS IN INDIA, &c.

27. *Respiratory Space in Jail Wards.*—It is an indisputable fact, that the cubic measurement of air, per man, in Indian Prisons, is, as a general rule, insufficient for the prolonged maintenance and preservation of the health and lives of their inmates. On the 30th April, 1857, there were confined, *without counting Civil prisoners*, in 30 of the Jails of Lower Bengal, 13,937 criminals; but allowing 500 cubic feet of space for each soul, as sanctioned by the late Court of Directors, there was accommodation for only 10,995, or for 2,941 *fewer criminals, than were actually incarcerated.* In the Patna, Dinagepore, Alipore, and Jessore Prisons, the numbers in confinement were 692, 887, 1,721, and 513; but if 500 cubic feet had been available for each soul, there would have been space for only 365, 623, 1,307 and 272, in each jail respectively. Thus, the excess of souls, confined in the Patna Jail, amounted to 327; in the Dinagepore Jail, to 264; in the Alipore Jail, to 414; and, in the Jessore Jail, to 241! At the period above stated, in many jails, the allowance of

cubic space did not exceed 300 feet; in some, it did not reach 250 feet, and in the Dargeeling Jail, it only amounted to 200 feet.

28. In reference to the data, from which the above facts have been culled, Dr. Mouat says,—"The whole of the cells, where they existed, were not occupied at that time; the hospitals were not, in all cases, filled, and most of the female wards had few occupants, so that the numbers given above do not show exactly the very injurious extent to which the criminal wards were overcrowded. When to this is added the fact that, scarcely one of these jails is properly ventilated, that many of them are placed in sites utterly insusceptible of drainage, and that a host of the criminals entering them are scorbutic at the time of imprisonment, the high rates of deaths, in the jails of Lower Bengal, need not excite surprise."

29. It is true that some of the jails have capacity for more individuals than find admission into them, but this space is, generally, even in these exceptional instances, rendered inadequate by the existence of bad ventilation, —a defect which might surely be remedied without either compromising their security, or aggravating the moral evils resulting from a system of discipline, which has corruption for its basis, and a rotten method of defective classification, or even promiscuous association for its superstructure. Taking the mean average accommodation, for all kinds of prisoners, in 55 jails, Dr. Mouat concludes, "that additional accommodation is needed in Lower Bengal for at least 5,000 criminals," and declares, "that until the present pressure is

relieved all other hygienic measures will be inoperative in effecting any great diminution of the sickness and mortality."

30. The following tabular statement shows (among other things), the quantity of space available, for each prisoner, in the Madras Presidency. There is no reason whatever to believe that, exclusive of *exceptiones*, the prisoners in the Bombay Presidency are better provided for, in this respect, than their colleagues in Southern and Eastern India.

TABULAR STATEMENT.—*Exhibiting the cubic space per man allowed in the Jails of the Madras Presidency compared with that allowed in the Barracks of England, Scotland, and Ireland, and in the Guard Rooms of the London District:—*

—	Average space in cubic feet per man.	Maximum.	Minimum.
Convicted Prisoners in 32 Madras Jails, in 1849	318	...	...
Ditto ditto in 1850	300	...	...
Ditto ditto in 1854	357	669	164
Prisoners waiting for Trial in 32 Madras Jails, in 1854	403½	803	173
133 Barracks in England and Wales, since 1847	576½	...	...
9 Barracks in Ireland, since 1847	738¾	...	...
23 Guard Rooms in the London Districts	577¾	...	...

31. The great difference in the cubical allowance of air allotted to an Indian prisoner, and that furnished to other individuals in the stations indicated in the above statement, is patent enough to observation. But, as it is generally maintained, by the expounders of

sanitary science, that the space allowed for the accommodation of our soldiers at home is insufficient to ensure healthy respiration for prolonged periods, the averages here given must not be taken as those to be imitated for criminals in this country.

32. There would appear to be no fixed plan of procedure for regulating the amount of space in our prisons. If there be, it certainly does not seem to have been universally, or even moderately acted upon. This is manifest from the great fluctuation that is discernible in the quantities of air available in different jails. Thus, in the Madras Presidency, exclusive of the the Myaveram jail, which supplied 1,580 cubic feet to each soul, the space fluctuated, in the year 1854, from 164 cubic feet at Masulipatam, and 197 at Honore, to 545 and 669 at Salem and Negapatam among convicted prisoners. Again, if we exclude the accidentally exceptional cases of Chittoor and Mercara, the one allowing 1,083,—the 1,674 feet, the amount of space varied from 173, 175, and 180 feet at Rajamundry, Nellore, and Honore to 657, and 803 feet at Salem and Chicacole respectively among the untried prisoners. Dr. Hathaway states in his *Report*, for 1857, that 17 female prisoners were confined in the Jhelum jail in a "ward measuring only 30 feet by 11 by 12," thus affording only 232 feet of air to each soul, for the correction of which glaring sanitary defect, he very properly recommended the construction of an additional barrack.

33. The defects above pointed out were demon-

strated in brilliant colours by Dr. James Hutchinson in 1835. In the second edition of his work on Indian Jails, published ten years after its first appearance, he observes, after having had great opportunities, as well as the ability and philanthropic desire to investigate the subject of jail hygiene in all its bearings, that, in very few jails, did the allowance of space exceed 500 cubic feet, and, in some instances, it fell below 300 feet. Mackinnon, three years afterwards, or in 1848, says that an average of 300 feet was not available, and that, in some cases, 70 feet was the miserable quantity.

34. I will now proceed to discuss the average space, which ought never to be encroached upon in existing prisons, and which is absolutely necessary, to secure the due aëration of the blood circulating through the lungs, upon the perfect accomplishment of which health and life are dependent. It may be useful to insert here the subjoined "extract from the Orders and Regulations laid down for the guidance of the Corps of Royal Engineers and Royal Sappers and Miners at home and abroad, revised by order of the Master-General and Board of Ordnance to the 1st January, 1851," showing the calculations of cubical space to be, viz. 400 to 500 cubic feet per man in barracks in temperate climates, 480 to 600 cubic feet per man in barracks in tropical climates. The new barracks, erected in Great Britain, since the promulgation of these measurements, are reported to be great improvements upon the older buildings; in a large number of which, say the Sanitary Commissioners, "there is a deficiency of one-third, and,

in some instances, of more than one-half of the space allowed by regulation."

35. Sir John McNeil states "that a pauper in the Scotch workhouses is allowed 480 feet per bed, and not only is this minimum rigidly insisted upon, but the houses being scarcely ever full, it is practically much exceeded, and the pauper is never in his dormitory during the day."

36. Dr. James Hutchinson coincides with Hennen and Tenon that the cubical allowance of atmospheric air per man should never fall below 800 feet, *unless* the means of ventilation by cross windows, fire-places, &c., are peculiarly good. It must, indeed, have been in anticipation of a thorough system of ventilation that the Madras Medical Board fixed the minimum space at 500 cubical feet for each prisoner. The Inspector-General of Prisons in the Madras Presidency, in his Report, for the year 1856, remarks that, "the Court of Directors have benevolently adopted the views of the Medical Board in regard to the necessity for providing 500 cubic feet of space for each prisoner."

37. My own opinion is in complete harmony with that pronounced by Hutchinson and other authorities. The allowance of 800 cubic feet per prisoner, whether performing, or exempted from, hard labour, should never be transgressed upon, unless effective ventilation is accomplished by the natural or artificial systems, or, in buildings, which are unmanageable by the former method, by a well-sustained combination of both. It will be noted tha this exceeds the minimum allowed to

Her Majesty's soldiers by the Regulations framed for the guidance of the Royal Engineers and Royal Sappers and Miners. But a very large majority of the civil and military scientific witnesses examined before the Sanitary Commissioners considered the space afforded in our Home Barracks as insufficient for the respiratory accommodation of the soldiers. It is also higher than that furnished to paupery in Scotch workhouses. But, if it be borne in mind that practically the 480 feet set apart by rule in these is only used for sleeping purposes, it will not so much exceed it, in reality, after all. The average available space is further increased by the fact that these workhouses are seldom, if ever, fully occupied.

38 *Respiratory Space in Jail Hospitals.*—Data are not at hand to enable me to illustrate the average cubical space, allotted to each prisoner, when rendered ineffective by the invasions of disease. It may, nevertheless, be observed that the prisoners are not very much better accommodated, in this respect, than they are in their wards or apartments. This was peculiarly the case in the Ajmere Jail Hospital, which was under my charge a few years ago.

39. With a view, however, to demonstrate how essentially necessary it is to have a very much larger space furnished for the sick than for the healthy, and to enable us to form some conclusion regarding the cubical measurement requisite for the sick, the following statement is subjoined, showing the average amount, afforded in 45 army, 3 naval, 20 provincial, 11 metro-

politan hospitals, the military hospitals of Paris, and in the Brussels military hospital.

—	Average cubic feet per man.	Maximum.	Minimum.
25 English Army Hospitals	632	1,143	400
5 Naval Hospitals	1,037	1,340	751
20 Provincial Hospitals	1,081	1,560	600
11 Metropolitan Hospitals	1,484	2,426	800
Paris Military Hospitals	1,486	1,900	1,050
Brussels Military Hospital	1,500	...	...

40. The regulation space, for each patient, in the army hospitals of Great Britain, is 600 to 700 feet; and in tropical climates 700 to 900 feet. It follows, therefore, that the allowance is either too small in these, or that it is excessive in Naval, Civil, and Continental military hospitals. The former conclusion was arrived at by the Sanitary Commissioners, and justly so.

41. In reference to this subject, Miss Nightingale, in her evidence communicated, in writing, to the Commissioners, in reply to question No. 10,026,—"What amount of cubic space should be allotted to each bed?" stated that "the cubic space for each patient has been fixed by European sanitary science at not less than 1,500 feet," and that a "good proportion for a ward of 20 patients would be 80 feet long, 25 feet wide, and 16 feet high. This would give 1,600 feet to each bed. It would give 13 feet between foot and foot. It would give an average of 16 feet to each two beds in width."

42. The minimum space, for an Indian prisoner, when prostrated by disease, should never fall below

1,000 cubic feet, even when a perfect system of lateral and perpendicular ventilation is in good working order. If 1,500 feet could be allowed—so much the better. But, whatever amount of cubic space may be allowed to prisoners, when in health, or when suffering from disease, it must always be recollected that the space after a certain minimum has been reached—say 800 feet for the healthy, and 1,000 for the sick,—is secondary compared with the vital importance of a simple, easily regulated and efficient system of —— Ventilation.

CHAPTER III.

ON VENTILATION.

43. No amount of space would be adequate to the preservation of health, without the existence of a thorough system of ventilation. For a man may be suffocated in a crowd assembled in the open air, with the whole vault of the heavens above him. Ventilation, therefore, by which is meant the circulation of air, so applied to inhabited dwellings as to effect the expulsion of all foul and noxious exhalations from, and the simultaneous admission of pure air into, them, is of paramount importance.

44. The best idea of a system of ventilation may be gained from a physiological examination of the process of respiration. Thus, at each inspiration, a certain quantity of air is drawn into the lungs, and diffused throughout the innumerable pulmonary cells, or pouches, for the purpose of delivering up a portion of its oxygen to the blood circulating through the capillaries situated in plexuses upon the walls of these cells or pouches. At each expiration, air containing a large admixture of carbonic acid, and a deficiency of oxygen proportionate to the quantity, which has been absorbed into the blood,

is expelled from the lungs. The result of the incessant egress of carbonic acid from, and the ingress of an equivalent amount of oxygen into, the pulmonary blood, is the decarbonization or revivification of the vital fluid —in other words, the conversion of *venous* into *arterial* blood.

45. Now as the result of respiration is the removal of carbonic acid gas and the absorption of oxygen, by which means the blood is being constantly purified and fitted for the nutrition and support of the body, it follows as a corollary that the prime objects to be achieved by any plan of ventilation, are to effect the never-ceasing introduction of pure air into, and the continuous extraction of carbonic acid from, every inhabited apartment. What pure arterial blood is, in a primary sense, to a healthy body, wholesome air is, in a secondary sense, to the efficient maintenance of healthy respiration, and through this, to normal harmopoiesis and nutrition.

46. The extraction of all foul air, and the free admission of unadulterated air, in rapid succession, and without interruption, in such a manner, as to secure the invariable presence of an atmosphere, in our jail wards and hospitals, constituted of 231 parts of oxygen, 769 of nitrogen and ·75 of carbonic acid by weight, out of 1,000 parts (the normal composition of air), would evince the attainment of the very essence of perfection in the arrangements adopted for ventilation.

47. But as this degree of success cannot usually be

calculated upon, except in very capacious, well arranged and sparsely tenanted buildings, it becomes necessary, especially in cases where large bodies of men are collected together in a confined area, to devise some simple and efficient means in order to secure the *nearest practicable approach to it.* To accomplish the objects here contemplated, every departure from complexity, and approximation to simplicity must be countenanced. In accordance with this view, preference must be given to the *natural* as distinguished from the *artificial* method of ventilation.

48. "The prevailing opinion as regards ventilation," write the Sanitary Commissioners, "is in favour of what is now technically called natural, as opposed to artificial ventilation; terms which have a conventional meaning, and may require explanation. By natural ventilation is meant the free ingress or egress of air through open windows aided by additional orifices placed in different parts of the room, through which the external air is allowed to enter and foul air to escape. Artificial ventilation is effected either by driving fresh air in, or by extracting foul air by means of suction, through the intervention of machinery, shafts and furnaces. Of the whole number of queries circulated by us (to Governors, Medical Officers, Superintendents, and Stewards of the chief hospitals of London and the country, on the subject of ventilation and construction), but three or four speak in favour of artificial ventilation. At Guy's Hospital both systems are in operation side by side, in the new and old build-

ings, and the preference is given to natural ventilation."

49. The prime recommendations of the natural method are its mechanical simplicity and economy. The great objections to the artificial method are its complexity and costliness. In this, derangement of the machinery employed brings healthy ventilation to a dead lock until the damage is repaired. In that, there never can be the slightest risk of the occurrence of such a contingency. But the greatest objection of all to the artificial plan is its superfluity, except as an adjuvant to the natural system when, from original mal-construction and position, buildings cannot be properly ventilated without a combination of the two systems.

50. To imitate, as far as practicable, by the natural method, the respiratory process, in the ventilatory management of jail cells, wards and hospitals, in India, it would only be necessary to have a sufficient number of openings, or windows in the side and gable walls and roofs; and to have these of such dimensions, and so situated as to effect the ingress of a continuous stream of fresh air, and the extraction of the expired air, and other impurities suspended in the atmosphere of the apartment.

51. To be practical, I will suppose, for the sake of example, that we have constructed a ward for the accommodation of twenty prisoners measuring, in length, from the interior of one gable wall to that of the other, exactly 80 feet; in breadth, from the interior of one side wall to that of the other, 20 feet; and, from the floor

to the ceiling, 10 feet. Ten men placed along one, and ten along the other longitudinal wall, at equal distances from each other, would have allotted to them an aggregate of 16,000 cubic feet of space. Each man would, in fact, be allowed a space to himself and his bedstead, if he were permitted to have such an indulgence, 8 feet wide, 10 feet high and 10 feet long, or 800 cubic feet.

52. With a view to insure the freest ventilation of this apartment, there should be nine substantial cross iron bar windows, in each side wall, and one in each gable wall; or twenty ventilatory openings, one of which might be replaced by a door. It is of essential importance that these windows should be high enough to allow all foul air, at a higher temperature than that of the apartment, to flow out above the heads of the inmates, and low enough, too, to admit of no accumulation of heavy, or foul air near the floor. These window openings, therefore, should be 8 feet high, and might be one foot, or 1½ foot in breadth (or if it should be considered that such large windows would interfere with the security of the ward, an opening (grated) near the ceiling, and another near the floor, might take the place of each). In order to prevent the accumulation of contaminated air near the ceiling, and to combine, in one natural system, perpendicular with lateral ventilation, there might be nine openings in the ceiling, placed midway between each set of opposite windows (or opposite grated openings). Each opening would lead into a small chamber, or conduit which would open over

each gable wall. With a recess for a necessary separated by a panelled spring-door from the chief apartment or ward, and so constructed as to admit of being cleansed out daily from outside; and shutters or venetians for the windows (or grated openings) to be opened or closed, as circumstances may require, the air of such a room ought to be kept thoroughly purified.

53. A hospital constructed for the accommodation of twenty daily sick, and allowing 1,000 cubic feet of space to each patient, would measure 80 feet in length, 20 feet in breadth, and 12½ feet in height. The same kind of ventilatory windows, orifices in the ceiling, or openings at the upper and lower part of the side walls and in the ceiling in sufficient numbers, protected from the inclemencies of the weather by adequate arrangements, as recommended for the jail ward above given, would answer admirably. A verandah would also be an essential appendage. And the addition of a second story would give space for double the number of patients, or for forty daily sick.

54. I would take this opportunity to remark that no increase of cubic space by heightening alone can ever compensate for defective lateral and perpendicular ventilation. So long as the height of a room is a few feet higher than the height of ordinary mortals, and so long as there is sufficient space, and pure air circulates freely, and with the desired quickness, there ought to be no complaint about ventilation. A certain amount of cubic space, it is true, can never be safely dispensed with; but it is manifest that the minimum space will

bear diminution only in proportion to the perfection of the arrangements made for the incessant removal of noxious emanations from, and for the equally incessant introduction of pure respirable air into, prison cells, wards and hospitals.

CHAPTER IV.

ON DIETARIES.

55. "In consequence of the advances made in physiology and chemistry," says Dr. Christison, "the nutritive value of any dietary, deduced from practical experience, may be tested with care and certainty by reference to its chemical composition. As this fact is little known to practical men, it may be well to explain the principles upon which the method is founded."

"(i.) All articles of food used by man consist of one or more, and generally several nutritive principles; and most of them contain water and an indigestible cellular tissue. The two latter must, of course, be deducted in estimating the nutritive value."

"(ii.) The nutritive principles consist of two sets, one of which maintains respiration, and the other repairs the waste constantly incurred by the animal textures in the exercise of their functions. As the respiratory principles commonly abound in carbon, they are sometimes called carboniferous, while the reparative principles, because they all contain nitrogen, are termed nitrogenous."

" (iii.) Experience has shown that the most successful dietaries for bodies of men, deduced from practical observation, contain carboniferous and nitrogenous food in the proportion of about three of the former to one of the latter by weight. During two and twenty years that my attention has been turned to the present subject, not a single exception has occurred to me."

" (iv.) Hence it is obvious that the least weight of food in the rough state will be required, first, when there is least moisture and cellular tissue in it; and, secondly, when the carboniferous and nitrogenous principles are nearest the proportion of three to one."

" (v.) Of the various nutritive principles belonging to each set, some may replace one another; some are better than others; some are probably essential."

" (vi.) Two things, however, are certain—that nitrogenous may replace carboniferous food, for supporting respiration, though at a great loss; but that carboniferous food (without nitrogen) cannot replace nitrogenous food for repairing textural waste."

" (vii.) The daily amount of nutritive principles of both sets must increase with exercise and exposure, otherwise the body quickly loses weight, and ere long becomes diseased. If the above proportion between the two sets be maintained, the weight of real nutriment per day varies, for adults at an active age, between seventeen and thirty-six ounces; the latter being required for keeping up the athletic constitution, or that which is capable of great continuous muscular efforts, as in prize running and other similar feats."

"(viii.) Dietaries ought never to be estimated by the rough weight of their constituents, without distinct reference to the real nutriment in these, as determined by physiological and chemical inquiry."

"Keeping these principles in view, and with the help of a simple table, it is not difficult to fix the dietary advisable for any body of men, according to their occupation. It is, also, in general, easy to detect the source of error in unsuccessful dietaries. For example," he concludes, "any scientific person conversant with the present subject could have foretold, as a certain consequence, sooner or later, of their dietary, that the British troops would fall into the calamitous state of health which befel them last winter in the Crimea."[1]

56. The chief points to be held in view, therefore, in fixing upon a suitable dietary for Indian prisoners, are, first, that the carboniferous or respiratory, and the nitrogenous or reparative principles, contained in it, should exist in the proportion of, as nearly as possible, three of the former to one of the latter by weight; and, secondly, that the whole allowance should be sufficient for the due maintenance of animal heat and the textural nourishment of the body. In calculating the nutritive value of the food, water and cellular tissue, and, according to the late lamented Dr. Pareira,[2] woody fibre and

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[1] *Observations on a Report*, by Sir John McNeil, *relative to Rations for Soldiers*. By Dr. Christison.

[2] *On Food and Diet.*

green colouring matter of vegetables must be excluded from the nutritive or assimilable side of our account.

57. It is highly important to bear these facts in mind, because the most fatal errors are daily committed by the use of dietaries in Indian prisons, which have been originally composed without much regard having been paid to their chemical constitution. Whilst, nearly every prison dietary I have examined contains the two sets of nutritive principles in fearfully disarranged proportions, their chemical composition is further vitiated by the presence of a useless excess of the carboniferous, and by a most dangerous deficiency of the nitrogenous or building-up elements. The inevitable consequences to those, upon whom such abnormal dietaries are compulsorily inflicted, are excessive carbonization and defective albuminization of the blood, clogging of the depurative organs, and imperfect structural nutrition or reparation, fatty degeneration of prime organs, general debility and depression of the physical powers, increased susceptibility to the invasions of disease, and want of reparative power when persons are so affected. "Deficiency of food," says Dr. C. J. B. Williams, "if long continued, causes general weakness of the functions and wasting of all the textures, except those of the nervous system. The blood becomes thin and easily extravasated; the gums spongy and bleeding; fat disappears, muscles become thin and flabby; the legs œdematous; diarrhœa often occurs; ulcers appear in the cornea and other parts, which are least vascular; a state of scurvy

or cachexy is induced, from which, if advanced, an improved diet may now fail to restore."

"In less extreme cases, poor living may excite tuberculory and scrofulous diseases, and other kindred forms of degeneration of organs. The bad influence of poor living is much more felt in those who are confined in close habitations, as in prisons, poorhouses, the cabins of ships, and besieged towns, than in those who are at large; and it is under such circumstances, that the insalubrity of some kinds of food, however nutritious, becomes apparent. Thus, even bread, with meat or broth, will not preclude the occurrence of scurvy; but a sufficient addition of fresh vegetables, and even of potatoes, prevents this disease from appearing."[1] In reference to this extract, Dr. Monat remarks that—"It is impossible to read the foregoing description, without recognizing in it a too accurate portrait of the majority of those who die in Jail Hospitals, and who have died in those hospitals for the past twenty years."

58. No better proof can, perhaps, be produced of the inadequacy of the dietaries employed in our Indian prisons than is afforded by a systematic contrast of the mortality which has occurred, during very nearly corresponding periods, among prisoners and sepoys from two of the chief diseases of the alimentary canal, viz., dysentery and diarrhœa. The subjoined authentic statement shows this very clearly:—

[1] *Principles of Medicine.* 2nd edition, pp. 36, 37. Quoted from Dr. Monat's Report for 1856–57.

		Ratio of Deaths from Dysentery and Diarrhœa per 1,000 of total Deaths.	Ratio of Deaths from Dysentery and Diarrhœa per 1,000 of Strength.
Bengal	Prisoners...1833 to 1854	298·41	21·65
	Sepoys.....1833 to 1852–53	113·32	1·63
Bombay	Prisoners...1831–32 to 1853–54	244·08	15·02
	Sepoys.....1831–32 to 1853–54	126·86	2·09
Madras	Prisoners...1844 to 1853	277·18	16·99
	Sepoys.....1842 to 1851	111·57	2·10

59. If follows, therefore, that the *excess* of mortality per annum from these two intestinal diseases among prisoners, compared with sepoys, has been:—In Bengal, per 1,000 of total deaths, 185·09, and, per 1,000 of strength, 20·02; in Bombay, per 1,000 of total deaths, 117·22, and, per 1,000 of strength, 12·93; in Madras, per 1,000 of total deaths, 165·61, and, per 1,000 of strength, 14·89.

60. It is difficult to determine the exact share which the dietaries in use may have had in producing this prodigious excess of mortality against prisoners; but it cannot be doubted that a large portion of it is justly ascribable to the quality of the food consumed. Overcrowding, bad ventilation, mal-construction, and mal-position of prisons, unwholesome conservancy arrangements, imperfect drainage and defective sewerage, have all co-operated with bad dietaries in augmenting the frequency and virulency of stomach and bowel affections among criminals.

61. But, whilst it is impossible to tell, with precision, the amount of the excess assignable to the nature of the food employed in our prisons, and how much of it may truly be attributed to other causes, it is certain

that, in the aggregate, the excess above recorded does not afford a correct idea of the mischief arising from the use of dietaries, which, as I will show by and by, are only fit for condemnation. There is scarcely a disease, in fact, to which the human frame is liable, that is not seriously influenced in its origin, development, climax, and termination, by the nature, quantity, and quality of the diet that may have been employed for some time prior to its invasion of the system.

62. The scorbutic and scrofulous cachexia produced by an impoverishing diet is favourable to the operation of every disease. It invites attacks and acts as an intractable obstacle to recovery. Hence, whilst we must recognize the combined action of defects of sanitation with innutrient food in leading to so much mortality from dysentery and diarrhœa, we must not omit to remember the effect of a bad dietary in increasing the mortality resulting from other diseases of a fatal character.

63. Medical records are fertile in affording instances of the injurious effects resulting from the employment of inefficient dietaries in Indian prisons. I will confine myself to three examples. They are rather lengthy, but they will well repay a perusal by all interested in perfecting, as far as may be practicable, the diet scales, in Indian prisons. 1. Dr. Leith, the celebrated civil surgeon of Bombay, gives a remarkable instance of the influence for evil of defective dietaries, and for good, of suitable food, for prisoners. He writes—"In the year 1846 it fell to me to devise a remedy for the excessive

unhealthiness that had long existed among the Native prisoners of the House of Correction in this island. This sickliness had in the preceding year been the occasion of a committee of medical officers being assembled to report on the site of the prison, and the accommodation of its inmates. The site had then been declared unexceptionable, and all apparent faults of accommodation, ventilation, and drainage had been remedied on the recommendation of the committee. The daily amount of labour exacted seemed light, being eighty minutes on the tread-mill, and six hours forty minutes at other work of an easy kind, and which was frequently sedentary."

"At the time when my investigations began, the dietary had not been inspected; it was now examined, and the conclusion was that the evil flowed from it. The diet table was as follows:—

Natives under 6 Months in Prison.	Natives above 6 Months in Prison.
Rice, 1 seer.	Meat, ½ lb., or Flour, 1 seer.
Dal, ¼ seer.	Rice, ½ seer / Dal, ¼ „ } or Rice, ¾ seer.
Ghee, 1 ounce.	Vegetables, ½ lb.
Salt.	Ghee, 1 oz.
	Curry stuff, ½ oz.
	Salt.

The quality of the various articles was found to be good. At this time, besides the ordinary cases of sickness, there were fourteen patients with scurvy in hospital. Of these fourteen, seven had been first sensible of the disease, when in prison between four and six months; five had been so when from six to ten months,

and two when from fifteen to eighteen months in confinement."

"From so large a proportion being affected with scurvy in the early months of imprisonment, it was concluded that the food allowed during the first half-year was insufficient to preserve health for so long a period; and it being thought that it was deficient in quantity, for it amounted to only 189 ounces a week, it was determined to increase it, at the end of the first two months. Also, from finding that scurvy manifested itself in those who had been for some time on what appeared the insufficiently liberal allowance granted after six months' imprisonment, it was concluded that there was wanting in the food some ingredient essential to the maintenance of health for a prolonged period. Being aware that there was not a Native of this part of India who does not habitually use *kokum*, *tamarind*, *ambsool* or amboshee (unripe mango sliced and dried), *limes*, or *pickles*, with his food of grain, I entertained the opinion that an acid condiment was the deficient ingredient in the diet, and determined to supply it to all in the prison. It was a matter of convenience to give the same article to all alike, and to facilitate a decision as to which it should be, inquiry was made, and it was found that of the substances above named, *kokum* was the best, being generally liked by the Natives, and being objected to by no caste, while at the same time it was easily procurable, and cheap. It is the dried fleshy part of the fruit of the *garcinia purpurea*, a tree which is cultivated in the Konkan. The

fresh fruit is variously named in different parts of the country *rat-toot*, *rat-am*, and *kokum*; the dried fruit, as sold in the bazar, is called *kokum*, *kokum ka cheelta*, or, by Marathas, *kokumsal*. So common is it that in Bombay it has supplanted the dried chip of the unripe mango, and has appropriated its names; for if the Guzerathee asks for *amsool*, or a Konkanee for amboshee, he is, as a matter of course, supplied by the shopkeeper with kokum. At first the daily allowance of this condiment was ¾ oz., but after some time it was reduced to ½ oz., on its being found that such was the average quantity actually consumed. As an acid condiment could not be used with merely rice, dal, and ghee, without spices, a daily allowance of ½ oz. of curry stuff was given to every prisoner, instead of, as before, restricting it to those who had been six months in confinement."

"As persons belonging to inland parts of the country on admission into prison were generally found to be unaccustomed to eat rice, the option was given to them, during the first two months, to take wheaten flour in lieu of half their allowance of rice, that the possible bad effects of a total and sudden change of diet might be avoided or lessened. It was thought that as the flour was much less bulky than the rice when cooked, those taking the former as part of their allowance were likely not to continue to do so if their appetites were good, but to have recourse to the more filling rice, which at this place must be considered the principal food of the prison."

"The only alteration made in the dietary of those above six months in prison, besides the addition of kokum, was leaving it no longer optional with them, as before, whether or not they should take dal: those who took meat were not allowed dal, but got an equivalent of rice; and those Hindoos and Boodhists, who on religious grounds took no meat, and had wheaten flour in lieu of it, were obliged to take dal with their rice. This rule was made from considering that an azotized vegetable principle such as is abundant in the dal, as in other pulses, was unnecessary when meat was eaten, but was of essential benefit when it was not used. The continuance of the allowance of ghee was thought desirable to supply the necessary fatty principle to the body." The altered diet table was as follows:—

Under 2 Months.	Under 6 Months.	Above 6 Months.
Rice, 1 seer, or { Rice . ½ seer / Flour ½ „	Rice ..... 1 seer	Meat, ½ lb. / Rice, ½ seer } or { Flour . 1 seer / Rice... ½ „ / Dal ... ¼ „
Dal ..... ¼ „	Dal..... ¼ „	Ghee .....1 oz.
Ghee..... 1 oz.	Ghee ..... 1 oz.	Vegetables.....½ lb.
Salt ..... ½ „	Vegetables (green, when procurable) ½ lb.	Salt.....½ oz.
Kokum ..... ½ „	Salt ..... ½ oz.	Kokum .....½ „
Curry stuff (onion, red pepper, turmeric, coriander) ..... ½ „	Kokum ..... ½ „	Curry stuff .....½ „
	Curry stuff..... ½ „	
Equal to 180 oz. a week, exclusive of condiments.	245 oz. a week, exclusive of condiments.	With meat, 225½ oz. a week. With flour, 266½ oz. a week, exclusive of condiments.

N.B.—1 seer of Rice, which is given by measure, weighs about 21 oz.
1 „ Flour (wheaten) „ „ 16 „
1 „ Dal (Toor) „ „ 20 „
The Toor Dal is the pea of the *cajamus indicus*. Ghee is boiled butter.

From 1836–37 to 1845–46 inclusive, when the old dietary was used, the admissions into hospital were 1,768·14, and the mortality 64·58 per 1,000 of strength, whilst from 1847 to 1850 inclusive, when the new scale was in force, the sickness fell to 818·42, and

the mortality to 11·14 per 1,000 of annual strength. The result, therefore, of the adoption of this revised dietary for prisoners, in the House of Correction at Bombay, was a diminution of the sickness and mortality amounting to no less than 949·72 and 53·466 per 1,000 of annual strength respectively during the four years ending 1850, as compared with the ten years ending 1845–46.[1]

64. 2ndly, Dr. Bedford,[2] after failing by an exhaustive inquiry, to find any other cause to satisfactorily explain the unusual mortality that occurred in the Rajshahye Jail, during eight months of 1853, when it rose to 95 per 1,000 of strength,—the average of the 7 preceding years having been 32·4,—the maximum having been 51 in 1850 and the minimum 19 in 1849, remarks, "that all the conditions of prison life in the Rajshahye Jail as existing in previous and healthy years continued unchanged, with the exception of a somewhat larger proportion than usual of prisoners from other districts being confined in it, *a diminution of the dietary*, and the prohibition of tobacco."

65. A new diet scale was introduced on the 1st of January, 1852, in place of the old experimental one sanctioned in 1843. "The difference between the two," writes Mr. Bedford, "consisted in the old dietary allowing a daily total of 22½ chittacks of uncooked food

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[1] *A Contribution to Dietetics.* By A. H. Leith, M.D. *Bombay Medical and Phys. Soc. Trans.* No. 1. *New Series*, 1851–52.

[2] *On the Excess of Mortality in Rajshahye Jail in* 1853. *Indian Annals*, No. 2, April, 1854.

to each 'labouring,' and 16½ chittacks to each 'non-labouring' prisoner, whilst the new adopted at Rajshahze Jail in January, 1853, reduced it to 17¾ and 15¾ respectively. Dal, mustard oil, salt, mussalah and fish were the items curtailed in quantity. The dal from 2 to 1 chittack, the oil, salt, and mussalah from ¼ to ⅛ of a chittack each, the rice from 9 to 7, and the fish from 4 to 2 chittacks. This change involved a daily loss of 4¾ chittacks to each labouring and ¾ chittacks to each non-labouring prisoner."

66. The grand mistake committed in this reduction consisted in the diminution of the nitrogenized articles, —Dal and Fish. And the injurious consequences resulting from this sudden change were aggravated by the fact that in the old Medical Board's dietary (see para. 74, et sequel), the nitrogenous elements were always deficient in quantity, and demanded augmentation rather than decrement. Had this been done, or even had the prison authorities left the nitrogenized principles alone, and confined their deductions to the rice or carbonaceous ingredients, the high mortality, in the Rajshahze Jail, during eight months of 1853, would, in all probability, never have occurred at all. When they struck at the Dal and Fish, they took away materials which could not be spared. The inevitable consequence of this injudicious interference—a consequence which could easily have been foretold by any person "conversant with the subject," was augmented sickness and an unusually high mortality bill.

67. 3rdly. The late Dr. Strong[1] gives one of the most striking instances, with which I am acquainted, of the fatal results arising from ignorant and injudicious interference with prison dietaries. The following statement, compiled from his comprehensive Table C., will suffice to demonstrate the accuracy of this observation in a most conclusive manner:—

	Annual Mortality per 1,000 Prisoners.
From 1838 to 1843 inclusive—six years. The term, "prisoners," in the Alipore Jail, were allowed a single daily ration, which was repeatedly interfered with.	68·8
From 1844 to 1851 inclusive—eight years—the Medical Board's two meal rations continued to be used.	42·4
From 1852 to 1854 inclusive—three years—a single daily ration was readopted; animal food reduced from 8 oz. to 1½ oz.; rice, and other articles, reduced; no meat, but fish allowed in the above minimum quantity; ghee and tobacco abolished, and an inferior description of rice (desee) substituted for a superior kind called ballam.	117·5

68. The Medical Board's diet Scale, which was employed from 1844 to 1851 inclusive, allowed 33 oz. for "non-labouring" prisoners, 13½ oz. of which constituted the morning and the remainder or 19½ oz. the evening meal. It allowed 45 oz. to "labouring" prisoners, or 15½ oz. to be consumed at the morning, and 29½ oz. at the evening meal. The prime defect of this scale was the deficiency of the nitrogenous elements, and great excess of carbonized ingredients. Still, with all

[1] Mr. Strong's *Jail Statistics*, TABLE C. *Indian Annals of Medical Science*, No. 5, *October*, 1855.

its short-comings, it must have been a marvellous improvement upon the single daily ration provided for the Alipore term prisoners during 1838 to 1843 inclusive, when the mortality was, on an average, 26·2 per 1,000 higher than during the eight years ending 1851.

69. In a circular, dated 24th November, 1851, the Medical Board's dietary by Mr. Loch's scale, which gave to each "non-labouring" prisoner a daily allowance of 31½ oz.—12¾ oz. for the morning, and 18¾ oz. for the evening meal. It allowed 35½ oz. for labouring convicts—12¾ oz. of which were set apart for the morning, and 22¾ oz. for the evening meal. It was the introduction of this scale, or a near approach to it, which, in the opinion of the late Dr. Bedford, was chiefly instrumental in leading to the increment of the mortality in the jail at Rajshahze, already alluded to in para. 64.

70. This new dietary was never employed in the Alipore Jail, according to Dr. Strong's testimony; but one, as subjoined, was introduced, in 1852, by order of the magistrate, which allowed 27½ oz. of food, to be consumed in one meal, notwithstanding its complete condemnation by the medical officer. There is no evidence to show that any distinction was made between non-labouring and labouring prisoners. One and a half ounce of jalpawn *per diem*, consisting of gram and parched rice, was given.

DIET TABLE.—*Exhibiting the Quantity and Kind of Food given at the Alipore Jail in one meal a day from 1st January, 1852, by order of the Magistrate.*

—	Rice.	Dal.	Vegetables.	Oil.	Ghee.	Salt.	Massalah per diem.	Fish.	Average total of each.	REMARKS.
	oz.	oz.	oz.	oz.		oz.	oz.	oz.	oz.	1½ oz. of Jalpawn per diem, consisting of gram and parched rice, allowed in addition, which adds a little to the 27½ oz.
Monday ...	20	4	4	½	None allowed.	½	½	...	...	
Tuesday ...	20	...	4	½		½	½	1½	27½	

71. Now, exclusive of condiments, the exact nutritive value of this scale amounts to, ——— what, ——— why only to ———

Carboniferous Nutriment.	Nitrogenous Nutriment.	Total Real Nutriment.
19·42	1·49	20·91

The proportion of the carboniferous to the nitrogenous principle is, therefore, as *thirteen* of the former to *one* of the latter, instead of standing to each other in the relation of *three* to *one*, as laid down by Dr. Christison. The severest condemnation that can be pronounced upon this apology for a diet scale is the mere mention of the fact that it raised the mortality from 42·4 (the annual average of the eight years preceding its introduction) to 117·5 per 1,000 of strength; and sacrificed unnecessarily, in three years, no fewer than 75·1 per 1,000 of the annual strength of prisoners in the Alipore Jail. That is to say,—that so much human life might, in all probability, have been saved, had this ridiculously constituted scale of food never been used at all, and

had the old one that preceded it for eight years, been rigidly adhered to. I am aware that Dr. Strong's data have been objected to; and it has been said that "so many sources of error are not taken into account in Mr. Strong's tables as to render it impossible to accept his conclusions in their present form." But, notwithstanding the high authority from whom this quotation is taken, I feel bound, with all deference and humility, to say that the diet scale above recorded might account for almost any conceivable amount of mortality,—or, in a very few years, for the absolute depopulation of any prison in which it might be persistently employed. By way of parenthesis, it may be added here, that prison dietaries should be fixed by legislative enactment, based upon the highest scientific advice that could be procured; and no departure from the prescribed scales should be countenanced, except by the advice and recommendations of the medical authorities.

72. I beg now to invite the reader's earnest attention to the "weak points" of the dietaries which have been, and are now, used in some Indian prisons. The following tabular statement gives a view of the articles of diet composing the *old* Bengal prison Dietary [1] (Medical Board's); the *new* Bengal prison Dietary [2] (Mr. Loch's); the Punjab Dietary [3] (Dr. Hathaway's);

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[1] Hutchinson *on Indian Jails*, p. 58, Second Ed. (1845).

[2] Mr. Strong's *Jail Statistics*, TABLE D. *Indian Annals*, No. 5, Oct. 1855.

[3] Dr. C. Hathaway's *Jail Manual*, p. 11 (1858).

and that proposed by Dr. Davidson,[1] for adoption in the Trichinopoly Jail, Madras.

Articles.	Bengal. Old.		Bengal. New.		Punjab.				Madras.	Remarks.
	Non-labourers.	Labourers.	Non-labourers.	Labourers.	Non-labourers.		Labourers.		Diet for Prisoners.	
	oz.	oz.	oz.	oz.	oz.	grs.	oz.	grs.	oz.	
Rice	22	26	22	24	...	...	...	...	28	8oz. of vegetables may be substituted for dal in 2 days out of 7 in the Punjab.
Atta (wheaten flour)	...	...	...	...	16	...	20	...	...	
Dal (split peas)	6	4	6	4	4	...	4	...	3	
Fish or flesh	...	8	...	2	...	...	...	...	1½	
Vegetables	2	4	2	4	...	...	...	...	5	
Ghee (melted butter)	½	1	...	...	...	...	...	...	·1663	
Oil	...	...	½	½	...	45	...	45	...	
Butter milk	...	...	...	...	...	...	...	...	12	
Salt	1	1	½	½	...	67½	...	67½	due proportion.	
Condiments	1	1	½	½	...	36	...	36		
Total	32½	45	31½	35½	20	148½	24	148½	49½	

73. If mere bulk were to be taken as a criterion of the value of a dietary, some of the above scales might pass muster very creditably. But no dependence whatever can be placed on the amount of food allowed, unless the carboniferous and nitrogenous principles exist in normal proportions. In arranging the articles entering into the composition of any dietary, therefore, we must never overlook the vast importance of ascertaining beforehand the relation in which these two sets of nutriment stand to each other.

74. It does not appear that this essential desideratum has been sufficiently borne in mind by those who

[1] *Report of the Inspector-General of Prisons, Fort St. George* (1856).

have framed the scales noted in the foregoing statement. In order to stamp this observation with the seal of the nearest approachable accuracy, I have taken the trouble to compute the nutritive value of each of these scales from the most trustworthy data available. A brief and condensed summary of the results arrived at is embodied in the subjoined statement:—

Dietaries and Classes.	Carboniferous nutriment in oz.	Nitrogenous nutriment in oz.	Total real nutriment in oz.
Old Bengal Dietary — Non-labourers ...	23·3580	3·3120	26·6700
Old Bengal Dietary — Labourers.....	25·8760	4·5740	30·4500
New Bengal Dietary — Non-labourers ...	22·8045	1·5962	24·4007
New Bengal Dietary — Labourers.....	23 4290	1·7568	25·1858
Punjab Dietary — Non-labourers ...	13·4700	3·6550	17·1250
Punjab Dietary — Labourers.....	16·3800	4·3550	20·7350
Dr. Davidson's proposed Dietary	27·0480	3·9260	30·9740

75. In compiling the above table, I have adopted the known composition of the nearest representatives of each article of diet, as the standard of comparison. I have been compelled to do this for the simple reason that up to this date, no careful quantitative analyses of the foods valued have been made in this country. Thus, the nutritive value of atta, or wheaten flour, has been calculated from Boussingault's analysis of the flour procured from the hard red wheat of Odessa; that of rice from Braconnot's analysis of Carolina rice; and that of dal or split peas from Einhof's analysis of peas (*pisum sativum*). There may, therefore, be some fractional errors in my computations, the demonstration and correction of which can only be accomplished by a

chemical analysis of the various articles of diet as they exist in India. I believe, however, that they are sufficiently truthful for practical purposes.

76. The salt and condiments, of course, find no place in these calculations, nor has any notice been taken of the vegetables which may be discretionally used in the Punjab. The substitution of vegetables for peas would very considerably reduce the nitrogenous principle, whilst nearly all that would be given in return would be water, salt, and inutilizable or unassimilable green colouring matter (*chlorophylle*). A chemical consideration of the Punjab dietary leads me to infer that it would be advantageous to give the 8 oz. of vegetables in addition to the articles allowed, and not in lieu of any one of them. If the latter plan is much practised, it follows that too favourable a view has been given, in the above computations, of the proportions in which the two sets of nutriment are available in the Punjab.

77. A careful examination of the nutritive values of the diet scales given in the foregoing tabulated statement will show that the relative proportions, by weight, in ounces, of the carboniferous and nitrogenous nutriment is :—

		Carb. Nut.	Nit. Nut.
In the *old* Bengal Dietary .	for non-labourers.....	7·05.....	1
	for labourers	5·65.....	1
In the *new* Bengal Dietary .	for non-labourers.....	14·28.....	1
	for labourers	13·33.....	1
In the Punjab Dietary.....	for non-labourers.....	3·68.....	1
	for labourers	3·76.....	1
Dr. Davidson's Dietary .....for prisoners		6·88.....	1

78. It follows then that the relation of the two essential principles is best arranged in the Punjab, and that it is seriously disturbed in all the other scales; but most of all in the new Bengal Dietary, in which the proportion of the carboniferous to the nitrogenous principle was, and probably is at the present time, 14·28 of the former to 1 of the latter for non-labouring, and 13·33 to 1 for labouring prisoners. The composition of this scale of diet is so excessively unnatural, that disease must inevitably result sooner or later, to any person compelled to adopt it. The same remark applies with considerable force to the old Bengal Dietary, and to that proposed for adoption in the Trichinopoly Jail in the Madras Presidency.

79. "The food," says Dr. Davidson, "is deficient in formative or plastic matter, namely, that which goes to make blood, and muscle, called azotized nutriment, or the albuminous principle. There is great abundance of non-azotized nutriment, amylaceous food, that which goes to support the heat of the body, which is not very much required in this country, and fat; but animalized food will be shown to be deficient." This description is applicable to nearly all the dietaries in use in Indian prisons. Now the ultimate effect of such dietaries is fatty degeneration of the prime organs, scrofula, scrobutus, cachexia, and general exhaustion of the vital powers. For no amount, however large, of the carboniferous, can ever replace the nitrogenous, principle except at an immense sacrifice of the physical strength; and, even in those cases, where the nitrogenized food may be per-

fectly adequate to meet all the wants of the system, excess of the carbonaceous element is eminently injurious.

80. When the nitrogenous principle is itself deficient in quantity, as is the case in all the dietaries under review, and when the carboniferous ingredient is out of all reasonable proportion excessive, as is the case in three out of the four scales, the furnace becomes overloaded with fuel, whilst the means of textural repair are not at hand. It is true that food of this description may maintain the bulk and rotundity of the human frame for a time. The excess of carbonized materials may and does become converted into fat, and be so deposited in large quantities in the omentum, beneath the skin and between the muscles; or this fat may be deposited, interstitially, in the muscles and prime organs, thus filling up the vacua occasioned by lost texture unrepaired or unrenewed. This result can, however, only happen at the irreparable deterioration and expense of the groundworks of the constitution. Blood excessively charged with carbon is not healthy blood. A heart, liver and kidney crammed with fat, are not equal to the normal performance of their respective functions. Obesity itself, physiologically considered, is rather a symptom of decay than of increasing vigour. A body so nourished resembles a furnace built with a large admixture of combustible elements. Who would think of repairing a smelting furnace with materials that would rapidly yield to the flames? or of substituting charcoal for the fire-proof bricks and cement?

81. "The experiments of Physiologists," writes Dr.

Mouat, "have shown that animals may for a time even grow fat, and exhibit an abnormal standard of apparent health and strength, from a diet which ultimately undermines the health, changes the character of the blood, destroys the function of assimilation, and kills the animal from absolute inanition." Every physician, who has had to combat the disease to which criminals in this country are subject, must have noticed that there is one invariable characteristic in their symptomatology, the existence of which renders all efforts at permanent restoration to health too commonly vain and disappointing in an extreme degree. This consists of a low and enfeebled state of the constitutional powers, tending towards the ultimate destruction of life. It is not only the asthenia or atonicity directly caused by the immediate disorder from which the individual may be suffering; but that kind of asthenia which is co-existent with and dependent upon impairment of the primary and secondary processes of assimilation, perverted harmopoiesis, mal-nutrition, and consequent insurmountable deterioration and debility of the prime organs,—the heart, lungs, liver, kidneys, stomach and intestinal mucous membrane. It arises from partial inanition, as regards the deficiency of the nitrogenized food, and from mal-nutrition as regards the carbonized food. It is, in truth, this state of things which accounts, in great part, for the small proportions of recoveries to attacks in prisoners, compared with sepoys and European soldiers, for the ravages which cholera produces when once it gains a secure footing in our Jails; for the appalling havoc

which is annually produced by dysentery and diarrhœa; and for that which is caused by other diseases of a more or less serious nature.

82. "That there is something radically wrong in the system of diet," says Dr. Mouat, "is indisputable, and it is equally clear that the quantity and quality of food sufficient to maintain an agricultural labourer in health when at liberty, does not preserve him from the great plague and scourge of jails when in confinement. On the other hand, while feeding above the standard procurable in a state of liberty is a premium to crime, particularly in times of famine and distress, diet ought not to be made an instrument of punishment. The argument that a prisoner in jail gets a greater amount of food than an honest labourer of the same class, and that therefore, the good living of the convict is more a temptation than a discouragement to crime, is not in itself a valid reason for reducing the diet of the latter, if it can be proved that a larger amount and greater variety of aliment is absolutely required for the same man in confinement, than was adequate to maintain him in health when at large. All disciplinarians admit that the amount of food to which a prisoner is entitled should be the minimum needed to *keep him in health and strength*. It is abundantly evident that, from circumstances which appear to be inseparable from imprisonment in every part of the world, and in every variety of the human race which has been subjected to penal restraint, this amount is in excess of what is amply adequate to preserve the health and strength of the

same classes and individuals in freedom. We have not then to consider what the honest labourer can obtain, but what is essential for the convict." Keeping these principles in view I have prepared two Scales,—one for prisoners in Bengal, where rice forms an important ingredient in the diet of the general population,—the other for those of the North-West Provinces and Punjab, where atta or wheaten flour is universally used, —founded upon the chemical composition of the articles entering into their constitution, and upon a physiological consideration of the wants of the individuals, for whose nutrition and support they have been designed.

83. These proposed dietaries are herewith submitted in the subjoined tabular statement.

Articles.	For Bengal.						N. W. Provinces and Punjab.					
	Non-labourers.			Labourers.			Non-labourers.			Labourers.		
	Morning.	Evening.	Daily Total.	Morning.	Evening.	Daily Total.	Morning.	Evening.	Daily Total.	Morning.	Evening.	Daily Total.
	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.
Rice	3	5	8	4	6	10	...	...	...	...	...	...
Atta	...	...	...	...	...	...	6	10	16	8	12	20
Dal	4	6	10	7	7	14	1	1	2	3	3	6
Fish	...	10	10	...	12	12	...	...	...	...	...	...
Mutton	...	...	...	...	...	...	...	6	6	...	8	8
Butter Milk	8	...	8	16	...	16	...	...	...	...	...	...
Ghee	...	½	½	...	½	½	¾	¼	1	¾	¼	1
Salt	¼	¾	1	¼	¾	1	¼	¾	1	¼	¾	1
Condiments	¼	¾	1	¼	¾	1	¼	¾	1	¼	¾	1
	15½	23	38½	27½	27	54½	7¾	19¼	27	11¾	25¼	37

Exclusive of the butter-milk, which has been included in the Bengal Scale, on account of the nitrogenous matter and important salts contained in it, the gross amount of solid food, in this dietary, is 30½ oz. for non-labouring, and 38½ oz. for labouring prisoners. Six ounces of vegetables should also be given, in addition to the ingredients prescribed above, twice or thrice a week, in all three situations. One-half of the condiments ought to consist of some vegetable or fruit largely impregnated with a vegetable acid, such as the dried unripe fruit of the mango, kokum, tamarind, limes, dried unripe apricots, &c., the other half of such spices as are used by the natives all over India.

84. The principal points kept in view, in arranging the above diet scales, have been, *first*, to secure a natural relation between the respiratory and reparative elements composing them; *secondly*, to see that these two essential principles exist in sufficient quantities for the maintenance of animal heat and the textural nourishment of the body; and *thirdly*, that the salt and condiments are abundant enough to sustain the normal tone of the digestive organs. No dietary can possibly be successful, whether applied to individuals or bodies of men, unless these important requirements are fully complied with.

85. Due care, it is hoped, has been taken to avoid excess as well as deficiency of food. Undue indulgence, and unnecessary privation, have, I believe, been equally avoided. The law does not contemplate the existence of either of these extremities. Society is convinced of

the moral injudiciousness of either extreme being permitted, knowing that, whilst it has no right to exact the one, the prisoner is equally disentitled to the luxury of the other.

86. The exact nutritive value of the two proposed dietaries is given in the following statement, which ought to be sufficient to show how little dependence can be reposed in the mere rough weight of the articles employed.

Dietaries and Classes.		Carboniferous Nutriment.	Nitrogenous Nutriment.	Total Real Nutriment.
		oz.	oz.	oz.
Bengal Dietary	Non-labourers...	13·0300	4·2750	17·3050
	Labourers	17·3400	5·7348	23·0748
N. W. Provinces and Punjab Dietary	Non-labourers...	13·4350	4·4200	17·8550
	Labourers	18·4862	6·2317	24·7179

Divided into morning and evening meals then the value of each would be as follows:—

Dietaries, Classes, &c.			Carboniferous Nutriment.	Nitrogenous Nutriment.	Total Real Nutriment.
			oz.	oz.	oz.
Bengal Dietary.	Non-labourers	Morning Meal	5·1720	1·0683	6·2403
		Evening „	7·8580	3·2067	11·3050
	Labourers	Morning „	8·0650	1·9189	9·9839
		Evening „	9·2750	3·8159	13·0909
N.W. Provinces and Punjab.	Non-labourers	Morning „	5·0518	1·0445	6·0963
		Evening „	8·3832	3·3755	11·7587
	Labourers	Morning „	7·5775	1·6611	9·2386
		Evening „	10·9086	4·5697	15·4783

87. There appears to be a notion to the effect that there are whole communities in this country, who sub-

sist exclusively upon vegetable food. This is a mistake. It is perfectly true that there are large classes of the community who are asarcophagous—that is, who do not use flesh in any form. But these individuals obtain the azotized matter, not supplied in adequate quantities in the vegetable food which they eat, by habitually consuming milk, or curdled milk, or dhaee, which is exceedingly rich in the nitrogenous principle. For prisoners belonging to this class, dietaries may be constructed quite as valuable in all the essential principles as the foregoing, simply by substituting an equivalent quantity of curdled milk, or dhaee, for the fish or mutton.

Asarcophagous Dietaries.

Articles.	For Bengal.						N. W. Provinces and Punjab.					
	Non-labourers.			Labourers.			Non-labourers.			Labourers.		
	Morning.	Evening.	Daily Total.	Morning.	Evening.	Daily Total.	Morning.	Evening.	Daily Total.	Morning.	Evening.	Daily Total.
	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.
Rice	3	5	8	4	6	10	...	...	...	...	...	...
Atta	...	...	...	...	...	...	6	10	16	8	12	20
Dhall	4	6	10	7	7	14	1	1	2	3	3	6
Curds or Dhaee	...	4	4	...	6	6	...	3	3	...	5	5
Butter Milk	8	...	8	16	...	16	...	...	...	...	...	...
Ghee	...	½	½	...	½	½	¼	¾	1	¼	¾	1
Salt	¼	¾	1	¼	¾	1	¼	¾	1	¼	¾	1
Condiments	¼	¾	1	¼	¾	1	¼	¾	1	¼	¾	1
Total	15½	17	32½	27½	21	48½	7¾	16¼	24	11¾	22¼	34

In addition 6 oz. of vegetables should be allowed twice or thrice a week in all three situations, and an adequate proportion of the condiments should consist of tamarind, kokum, lime, &c. If (as has been assumed) the allowances of curds yielded about 2·100 and 2·520 oz. of nitrogenous nutriment for non-labouring and labouring prisoners respectively in Bengal, and 1·7406 and 2·320 oz. of nitrogenized nutriment for non-labouring and labouring prisoners respectively in the North-West Provinces and Punjab, the fish and mutton in the dietaries for sarcophagous criminals would be fairly substituted as regards the azotized principle; and the value of these asarcophagous scales would be very nearly equal in carboniferous and nitrogenous elements to those which have already been given for sarcophagous convicts.

I have to add that the success or non-success of the above dietaries might be thoroughly tested by having the prisoners weighed at regulated periods; this being a very simple, easy, and comparatively unerring method of determining the efficiency or non-efficiency of any diet whose nutritive principles exist in the proportion of *three* of the carboniferous to *one* of the nitrogenous principle; and whose vegetable supplies are varied and powerfully antiscorbutic. "The great test of sufficiency of food," writes Dr. Davidson, "is weight. When the weight of a man's body diminishes much, the man being in health, it is evident that the supply is not equal to the demand; that the disintegration of the bodily tissues is proceeding more rapidly than reparation is

taking place; and, as stated, this disintegration is greatly augmented by labour." "All observation tends to show," writes Dr. Christison, "that when a large proportion of a body of men lose sensibly in weight, ill-health is at no great distance." Mr. Hill, in his work on *Crime—Its Amount, Cause and Remedies*, considers that the best test of impaired health is a gradual and continuous decrease in weight; and that, besides being simple and expeditious, weighing is not liable to the errors arising from the want of a definite standard.

The utility of weighing the prisoners is thus stated by Mr. Milner, one of the Surgeons of the Wakefield Prison:—"All the prisoners were weighed every month, and I consider the information obtained by this measure to be very valuable. In a great proportion of the cases in which a prisoner's health has failed in this prison, it has been found that a gradual loss of weight for several months had preceded the appearance of any more direct symptoms of disease. It frequently occurs that prisoners, who appear to be in good health, and have not complained either of illness or of wanting more food, have been found to have lost weight steadily for several consecutive months. In such cases I am accustomed to give more food, and I am fully satisfied that by so doing, I have prevented serious failure of health, from which it might have been difficult, if not impossible, to have recovered the patient. There are, perhaps, a few cases in which a prisoner, on admission, may carry more flesh than is necessary for the maintenance of a state of

good health, and, therefore, in which he may lose weight with the effect of improving rather than of deteriorating in health; but such cases would be readily distinguished from those in which a gradual loss of weight was the first symptom of incipient disease; and my experience would lead me to say, that the number of cases in which a prisoner loses weight with advantage to his health is infinitely small, compared with the number of cases in which the loss of weight is associated with a lowering of the general tone of the system, which, if not checked, would result in the development of any disease to which the prisoner had a predisposition."

There are, however, certain modifying circumstances which ought to be recollected in submitting any given scale of diet to the weighing test.

1st. AGE.—"The extremes of life—youth and old age," writes Mr. Bedford, "are naturally marked by an increase and diminution in bulk respectively, but we may lay it down as a demonstrable proposition that men from 20 to 30 years of age occupied in bodily labour exhibit a slight increase, and those from 30 to 50 maintain an even standard." Thus any diminution of weight in the former class "will most certainly point out a state of disease, or at least failing health;" whilst in the former, though always a suspicious consequence when great, it may not invariably be indicative of immediate mischief when small.

2ndly. STATURE.—This was found to exercise a decided influence upon prisoners employing the same dietary, at the Model Prison, Pentonville. Thus,—

"Besides the quantity and quality of the food, other circumstances have been found capable of modifying materially the condition of the prisoners as tested by their weight. In looking over the tables of weight kept in the prison, it was remarked that prisoners of a larger size suffered the most considerable reduction on the same allowance on which those of smaller growth gained weight; a fact leading Dr. Rees to infer that in prison populations, comprising both adult and juvenile offenders, the diet should be modified rather by weight and stature than by age."

3rdly. LABOUR EXACTED.—That the quantity and quality of the food required must vary in proportion to the amount of muscular exertion undergone, is obvious enough. If the proper relation between the food supplied and the labour, or muscular wear and tear, be not steadily maintained, loss of weight and ill-health must soon follow.

CHAPTER V.

ON THE WATER SUPPLY.

88. "WATER," says Dr. Pereira, "is more necessary to our existence than solid food; and in this point of view it holds an intermediate rank between air and solid food, being less essential than the first, but more so than the last." If we except a few of the lowest orders of vegetable and animal life, viz., mosses and infusoria, which may be deprived of moisture for a considerable period and still retain their vitality, water is essential to the existence of all "the higher classes of living beings."

"A very large proportion of the human body is aqueous. The blood contains about 80 per cent., and flesh about 74 per cent., of water. So that we may assume that the entire human machine contains nearly 75 per cent., or three-fourths of its weight of water. But as by evaporation, as well as by the processes of secretion and exhalation, as also perhaps by decomposition, part of this fluid is wasted or consumed, the necessity of the use of water as a drink becomes obvious." Again, "It is from the water that the tissues derive their properties of extensibility and flexibility. Lastly,

this fluid contributes to most of the transformations which occur within the body. As a solvent, it serves not only to aid digestion, as already noticed, but also to effect other changes. Thus, it is probable that the conversion of uric acid into urea, by the action of oxygen,[1] is effected by the agency of water, which holds the acid in solution; for in animals which drink much water, no uric acid, but urea only, is found in the urine, whilst in birds, which seldom drink, and in snakes, uric acid predominates."

In some cases, water combines chemically with substances, to which, therefore, it contributes both its elements. Thus the conversion of either cane-sugar (Carbon 12 Aqua 11), or starch (Carbon 12 Aqua 10), into either sugar of milk (Carbon 12 Aqua 12), or diabetic sugar (grape sugar Carbon 12 Aqua 14), can be effected only by the addition of water. So also the hydrochloric acid of the gastric juice, and the soda of the blood and bile, are derived from common salt (chloride of sodium) by the aid of water.[2]

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[1] Conversion of Uric Acid into Urea:—

	C.	N.	H.	O.
1 eq. Uric Acid ...	10	4	4	6
4 eq. Water	–	–	4	4
6 eq. Oxygen	–	–	–	6
Total.....	10	4	8	16

	C.	N.	H.	O.
2 eq. Urea	4	4	8	4
6 eq. Carbonic Acid	6	–	–	12
Total.....	10	4	8	16

[2] Conversion of Chloride of Sodium into Hydrochloric Acid and Soda:—

	Cl.	Na.	–	–
1 eq. Chloride of Sodium				
1 eq. Water	–	–	H.	O.
Total.....	Cl.	Na.	H.	O.

	Cl.	–	H.	–
1 eq. Hydrochloric Acid				
1 eq. Soda.....	–	Na.	–	O.
Total	Cl.	Na.	H.	O.

89. The *quantity* of water consumed may, as a general rule, be left to the taste, or appetite of the individual. "The signal," says Dr. Prout, "that water is required for the purposes of the animal economy is denominated *thirst;* and if this signal be obeyed, and water be taken in the requisite quantity, the thirst ceases, and the purposes served by water are accurately fulfilled. The water thus taken into the system is employed in two modes; as a simple diluent constituting the medium or vehicle in which most organic operations are carried on; and as immediately associated with organic principles, or furnishing certain of the elementary materials of which they consist. These two modes in which water is employed in the animal economy are not only essentially distinct, in their character, but apparently remain distinct throughout the whole range of aqueous operation."[1]

90. The *quality* of the "antediluvian beverage" requires particular attention — especially in tropical climates, where, from the prolific abundance of animal and vegetable growth, and the want of a proper balance being maintained, between the processes of organic life and decay or decomposition, as also from defective sanitary arrangements, the water, used by an Indian criminal, is ever and anon liable to become contaminated by deleterious compounds. In addition to organic sources of pollution, it is sometimes rendered unwholesome, by containing excessive quantities of chloride

[1] Dr. Prout on *Stomach and Renal Diseases*, pub. 1848.

of sodium and nitrate of potash. A few practical observations, on the different descriptions of water, generally consumed in Indian prisons, and on the most approved methods of purifying these, may not be altogether unacceptable to my scientific readers.

91.—1st. *River Water.*—This is composed of spring, rain and snow water. "The water of the large rivers in these provinces (Ramghur, Chota Nagpore, Sirgooja and Sumbhulpore) is generally good, and when transparent may, at all times, be partaken of with impunity. Although the rivers derive their source from the mountains, and must be frequently contaminated by mineral and vegetable substances, yet when these are diffused, in a large body of water, constantly flowing, the impregnation is scarcely perceptible."[1] The water of small rapid streams is usually more wholesome than that of large, sluggish, and navigable rivers. Our mountain streams are infinitely purer than those which course through the immense alluvial Doabs and Deltas of India. As a general rule, the water obtained from rivers decreases in purity in the direct ratio of the distance from their original sources.

92. River water holds, in solution, mineral and organic compounds. It contains, in a state of mechanical suspension, living vegetable and animal organisms, decomposing mineral and organic matter. As, however, all these suspended impurities can be removed by

[1] *Medical Topography of the Districts of Ramghur, Chota Nagpore, Sirgooja, and Sumbhulpore.* By P. Breton, Esq. *Bengal Medical and Phys. Soc. Trans.*, No. 2, p. 239, 1825.

subsidence and subsequent filtration, its comparative purity may be insured with facility. Even the muddy waters of the Ganges, Jumna, Irrawaddy, Indus and Godavery, where they are not seriously impregnated with sewage issuing from populous cities, or contaminated by tidal influences, may be tolerably well purified in this manner.

93. But, if river water contain, in solution, great excess of organic ingredients undergoing decomposition, as is often the case, in those great rivers which receive the sewage and refuse of large cities, it becomes very unwholesome. The Hooghly, at Calcutta, may be cited as an instance corroborative of the truth of this statement. The Arracan is another. Several branches of this river flow through the town (of the same name), in every direction. "The banks of the stream, generally, through the town, are low, and covered with sedge, coarse grass, and a few bushes, serving as a receptacle for filth of every description. The stream itself is made the receptacle of dead bodies, many of which, in the most offensive states of putridity, are constantly to be seen, at the different points, where an obstruction is offered to their progress to the main stream."[1] "The rivers" (of India), says Dr. Ranken.[2] "however pure on issuing from remote mountains, are more and more polluted in their course by the confluence of rivulets. These rivulets are formed by rain which, falling upon

[1] *Sketch of the Medical Topography of Arracan.* By R. N. Burnard, Esq. *Bengal Medical and Phys. Soc. Trans.*, No. 3, 1826.

[2] *On Public Health in India, op. cit.*, p. 317.

trees, herbs and grass, dissolves a portion of their substance, trickling gradually into the nearest channel. The innumerable rills of this description which unite and finally join the great stream, consist in reality of an infusion of the products of the soil. In addition to this tribute of impurity, the Ganges itself, and all the rivers of India, besides nobler purposes, serve as the common sewers of the wide regions which they traverse. They are the last receptacles of all that has ceased to live, from the bodies of men and quadrupeds to weeds with the myriads of animalcules and aquatic plants that breed and rot on their margins."

94. The Thames, at London, is, perhaps, the filthiest river sewer of the world. It receives daily the sewage and other refuse animal and vegetable matters issuing from many hundreds of different channels. It is a huge sink, in which are deposited the excreta and offal of nearly three millions of human beings, and of hundreds of thousands of the lower animals. From Putney to Woolwich, the waters of the Thames are so excessively charged with the exuviæ of mankind and the lower animals, which are partly held in solution, and partly in suspension, as to be unfit for human consumption. In addition to these impurities, Thames water is still further adulterated by tidal influence.

95. "Decomposing organic matter," says Dr. Pareira,[1] "in suspension or solution, is found in every

[1] *On Food and Diet.*

river water in a greater or less proportion. Ordinarily the quantity is insufficient to act injuriously; but it cannot be doubted that water, strongly contaminated with it, must be deleterious. Where, however, the quantity present is insufficient to produce any immediately obvious effects, it is by no means easy to procure decisive evidence of its influence on the system. In those cases in which its operation has been unequivocally recognized, it has manifested itself by the production of dysentery. Its influence in a milder form is attended with slight relaxation of the bowels." "The effects of drinking bad water," says Dr. Kenneth Mackinnon,[1] "are more prejudicial to public health than, I suppose, is generally conceived. It is seldom purified by even the higher classes (of natives), and, when impregnated, as much of it is, with vegetable impurity, it produces dysentery, and I firmly believe remittent and intermittent fever also." "The authorities at Peshawur," says Dr. Lyell,[2] "do not seem to be impressed with the importance to health of pure water, no measures having been taken to provide it for the use of the troops. Owing to the great depth at which it is found from the surface, only one well has been dug, and that belongs to a Parsee merchant. During the hot months, the officers bring their drinking-water from the cold wells of the city, but all the others are obliged to draw their supply from a filthy stream which runs

[1] *On Public Health*, p. 33.

[2] *On the Topography of the Peshawur Valley. Indian Annals*, No. 3, p. 24, 1854.

from one extremity of the cantonment to the other; however pure this may be at its source, it becomes polluted in its course, and is not at all adapted for drinking purposes."

96. Dr. Hathaway,[1] in his report for 1857, observes that "the mortality (in the Peshawur Jail) is the highest of all the Jails in the Punjab, amounting to no less than 24 per cent.; the majority of the casualties occurred in the months of September, October and November, and were most numerous amongst the mutinous sepoys, who died off very rapidly from scurvy."

97. With Dr. Lyell's testimony to the effect that the troops at Peshawur were not supplied with wholesome water for drinking and culinary purposes in 1854, any person conversant with the slow progress of sanitary reform in India generally, and in our prison establishments particularly, and acquainted with the rapidity with which water in this country becomes contaminated by organic matter, derived from external sources, would naturally enough inquire, whether the aqueous supply to the prisoners in the Peshawur Jail was not so adulterated in 1857, as to render it unfit for human use. Water so contaminated is not only itself productive of diseases of the alimentary canal, but its continued employment by men so affected offers an insuperable barrier to convalescence. It is true that other causes, such as overcrowding, bad conservancy arrangements, defective

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[1] *Report of the Inspector-General of Prisons in the Punjab, for the year* 1857.

sewerage, malaria, and insufficiently nutritious food, &c., must have co-operated in sending nearly *one quarter* of the Peshawur prisoners, in one year, to their long homes. But the question is, did not the use of impure water act, in conjunction with these removable sources of disease, in raising the mortality to so high a figure?

98.—2nd. *Well Water.*—The great alluvial plains, which are watered by the large rivers, may be compared to vast sponges, whose nether parts are saturated with water continually flowing onwards to find the lowest possible level. This underground water rises and falls with the rise and fall of the rivers, nullahs, tanks, and other aqueous channels and reservoirs. And, so do the wells sunk, in immediate proximity to them. As the soil through which the feeding water percolates, is highly charged with organic constituents, these wells are liable to be filled with water largely impregnated with organic components.

99. In hilly regions, the subterraneous currents are principally derived from rain, melted snow, streamlets, rivulets and rivers. These currents are interrupted, and directed by variations or peculiarities in the strata of the rocks. Sometimes these subterraneous streams may be tapped by sinking down to the surface of the rocks, especially in the vicinity of lakes and large rivers; but more generally several strata have to be perforated before a permanent supply can be guaranteed. This is the case in Rajpootana, many parts of Central India, Upper Provinces, Punjab, and of the Bombay Presidency. In these situations, solid rock has often to be penetrated

to a depth varying from 15 to 60 feet or more, before an unfailing annual supply can be insured.

100. Well water holds, in solution, a certain proportion of every soluble substance with which it may have come in contact during its downward passage through the pores and crevices of the earth's crust. Its mineral and saline constituents are similar, in kind, to those found in river water. These exist, however, in larger quantities, in the former than in the latter. The great distinguishing characteristics of well water are the abundance of bicarbonate and sulphate of lime[1] held, in solution, in it, and its consequent *hardness*. The comparative excess of these earthy components is not usually deleterious to health.

101. When well water is brackish, from excessive impregnation with nitrate of potash (saltpetre), and chloride of sodium (common salt), it operates injuriously on the digestive organs; predisposing to, if not indeed producing, dyspepsia, diarrhœa, dysentery and other internal affections. Dr. Tytler[2] remarks that, at Mullye, "water is universally got by sinking wells, which seldom require more than a depth of eight or ten

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[1] Excess of sulphate of lime was supposed by Wibmer to act as an astringent; causing constipation and disordered digestion. But Parent de Chatelet ascribes to it a purgative quality, and refers the chronic diarrhœa, so often observed in the hospital of Saltpetriere and the prison of St. Lazarus to a "very great proportion of sulphate of lime and other purgative salts" contained in the water with which both these establishments are supplied. *Vide* Pareira *on Food and Diet.*

[2] *Remarks on the Climate of Mullye: Bengal Medical and Phys. Soc. Trans.*, No. 4, p. 372.

feet. Many of these are strongly contaminated with saltpetre, and it is a fortunate circumstance to discover one free from this contamination." Dr. Macnab[1] states that, at Nusseerabad, "water is procured by sinking wells to a great depth through the solid rock which gives it a saline impregnation." The brackishness of the water, conjoined with the saline character of the soil, proves an effective bar to the extension of horticulture within this cantonment. About a mile and a half or so from the station, the pure crystal is procured from a well at Dilwarra. At Beaur and Ajmere, the well water is perceptibly tainted with saline matters. But there are certain wells, at both places, from which sweet water is obtained. Dr. Barra[2] states "that the water, in nearly all the wells around Nuggur is slightly brackish, from the presence of soda and potash, and leaves a slight white efflorescence on the surface of the soil when used in irrigation. This is often a source of serious annoyance, to both Europeans and Natives, in travelling through the district, as scarcely any two wells hold the same proportion of these, or other salts, in solution; a free use of the water causes pain in the stomach and bowels, with diarrhœa and other minor evils." Dr. Forbes[3] remarks that, "except in the vicinity of detached hills, the water throughout the

[1] *On Scurvy at Nusseerabad, Bengal Medical and Phys. Soc. Trans.* No. 8, p. 108. 1834.

[2] *Topographical and Statistical Details of Amednuggur, Bombay Medical and Phys. Soc. Trans.* Vol. II., 1837.

[3] *Report on the Disease at Pali, as observed in January and February*, 1838, *op. cit.*

whole districts (of Marwar) is more or less brackish, and towards its western boundary, in the direction of the Luni (or, as its name implies, the salt river), are extensive tracts of salt marsh or Runn, which afford employment to many of the inhabitants of Panchpadra, Soziala, &c., in the manufacture of salt." Dr. Mouat[1] says, that the water, obtained from the wells of the Sarun jail, "contains a large proportion of salts, which are doubtless more or less injurious to the convicts." Excess of the saline ingredients, above alluded to, is very commonly met with, in the water drawn from the wells of Upper, Western, and Southern India.

102. Well water is liable to become contaminated, by decomposing organic matter, in one of two modes, or both; *first*, by the direct deposition of dead animal and vegetable substances in it; and *secondly*, by the percolation of sewage, and other decomposing organic materials, through chinks in the masonry, or fissures in the sides of kutcha wells, or through the soil, in the immediate neighbourhood, into the feeding subterraneous currents.

103. Mr. J. Bettington[2] says, that wells, whether in the jungle or the plain, require care. They are sometimes altogether neglected; mud and refuse accumulate near, and are washed into the wells, when the parapet walls are imperfect; overshadowed by trees, quantities

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[1] *Report of the Jails of the Lower Provinces of the Bengal Presidency for* 1855-56. APPENDIX No. 1, p. 5.

[2] *On Decaying Vegetable Matter in Wells and Nullahs as productive of Disease. Indian Annals*, No. 6, 1856.

of leaves fall into them; noxious plants are allowed to grow round their margins, and it is especially deserving of notice that both the roots and leaves of many of these plants which love the water, are *poisonous*. "The wells," says Dr. K. Mackinnon,[1] "from which the inhabitants drink, are often left full of rank weeds, and are also frequently impregnated with saline ingredients." "There are," says Sub-Assistant Surgeon N. M. Dutt,[2] "fourteen wells within the compound of the (Patna) Penitentiary; of these, five are puckah, and the remaining nine are kutcha. The puckah wells are very near the privies. The drains running North and South are all kutcha, and are close to the wells opposite to the kutcha wards, and washings therefrom, at all times, percolate into the said wells."

104. Dr. Cornish,[3] of the Madras Medical Service, describes, in a very intelligible manner, how wells in India become contaminated by excrementitious matters. "In Coimbatore, all the drinking water is procured from wells within the town. These are of the shape and size common everywhere in India. In the hot and dry seasons the water gets very low in the wells, and many of them are quite empty. All the tanks in the neighbourhood are quite dry. The heavy rains of the South-West

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[1] *On Public Health*, p. 39.

[2] *Indian Annals*, No. 4, p. 573. "This penitentiary has been abolished by order of Government."—ED. *I. A.*

[3] *Extracts from the Annual Report of the Medical Officer in charge of the Jail at Coimbatore, for the year* 1857. *Report of the Madras Inspector-General of Prisons for* 1857, p. 33.

Monsoons do not reach Coimbatore, but the tanks are then filled by a channel communicating with the Noel River, and the waters then brought down contain a large quantity of organic matter. The wells, however, do not fill properly, until the North-East Monsoon begins, when a considerable quantity of heavy rain falls, and the town is thoroughly washed. The surface soil being, for the most part, composed of decomposed grass and layers of conglomerate limestone, allows of very rapid percolation, and thus large quantities of human fæcal matter, and every conceivable impurity, are carried into the drinking water of the inhabitants." What is here reported to take place, at Coimbatore, occurs on a greater or smaller scale in almost every city, town, village and *jail* in this country. Need we be surprised then, that cholera clings with such adhesiveness to, and produces such fearful havoc amongst, the wretched criminals, which crowd our prisons?

105. Though much is not to be learnt, regarding the contamination of well water, in jails, by the percolation of sewage materials, from the late prison blue books of the three presidencies, its adulteration, by this insidious and invisible process, may, nevertheless, be safely inferred from the almost universal existence of bad drainage, or none at all, bad position of the privies, bad conservancy arrangements, and defective sanitation. Dr. Mouat's able and comprehensive reports are, however, exceptional. They are replete with valuable suggestions, for the sanitary improvement of the numerous jails under his supervision, and leave

little doubt about the justice and accuracy of the inference which has been drawn.

106. Another source of impurity, in certain wells, is their proximity to graveyards. Many of the London wells have been abandoned, on account of the unwholesomeness produced by the percolation of the metamorphosed elements of dead human bodies huddled together, in rank abundance, in adjoining churchyards.[1]

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[1] "In addition to its saline or natural impurities, the well water of London is sometimes contaminated by organic matters, the source of which, especially in the pump water of churchyards, is sufficiently obvious; and such is usually the place selected for the parish pump. This disgusting source of water should be avoided; and the disgraceful system of burying the dead in the streets of the metropolis should be authoritatively discontinued. Of this nuisance, abundant instances occur to every one who walks about London; the churchyard of St. Clement's, in the Strand, is a fair specimen, and there are many infinitely worse. In these the same graves are repeatedly opened, and the coffins thrust in one upon another, according to the most inexplicable system; and it is beneath this superstratum that the waters of the adjacent wells flow; in some instances, perhaps deep enough to avoid direct contamination, but never free from the suspicion of the oozings of the vicinity."—(Brande's *Dictionary of Materia Medica and Practical Pharmacy*, p. 81, 1839.) In the *Report on the Health of Towns* (*effect of Interment of Bodies*), dated 14th June, 1842 (327), it is stated that this pump has been obliged to be shut up, as the water was found unfit for use. In the same work, Dr. Copland, in his evidence before the Committee of the House of Commons, states, that water, which percolates through soil, abounding in animal matter, becomes injurious to the health of the individuals using it. "This fact," he says, "has been proved on many occasions, and especially in warm climates; and several remarkable facts illustrative of it occurred in the Peninsular campaign. It was found, for instance, at Ciudad Rodrigo, where, as Sir James Macgregor states, in his account of the health of the army, there were 20,000 dead bodies put into the ground within the space of two or three months, that this circumstance appeared to influence the health of the troops,

107. Now water so contaminated, whether from the decomposing bodies of the dead, or from the sewage and noxious exuviæ of the living, or simply from the admixture of decomposing vegetable matter, not only proves directly injurious to the health of those consuming it, but it constitutes a fitting medium for the convection and propagation of the germs of pestilential diseases. It is highly probable, that the seeds of typhus and cholera are frequently extended amongst particular portions of communities in this way. The late Dr. Snow held this opinion. But, be this as it may, there is no fact more surely established than that water impregnated with such impurities,[1] as have been indicated above, gives increased virulence to any epidemic disease prevailing amongst the people, who may have been using it antecedent to, or are using it at the time of, its prevalence. "The quality of the water which has pro-

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inasmuch as for some months afterwards, all those exposed to the emanations from the soil, as well as those obliged to drink the water from the sunk wells, were affected by malignant and low fevers, and by dysenteries, or fevers frequently putting on a dysenteric character. The digestive operations are affected by water abounding with putrid animal matter; so that burying in large towns affects the health of individuals, in the first place, by emanations into the atmosphere, and, in the second place, by poisoning the water percolating through that soil."—*Vide* Pareira *on Food and Diet.*

[1] Dr. Mouat, doubtless, had this fact in view, when he recommended, during a cholera epidemic, in the jails, under his superintendence, that all leaks in the sides of the wells should be carefully stopped to prevent, as far as possible, the percolation of water from the surrounding soil, and that the wells should be cleaned out, and at least two feet in depth of charcoal and dry river sand be placed in the bottom of each.—*Vide* his *Report* for 1857–58, APPENDIX III., p. 77.

duced such fatal results in the metropolis, causing two-thirds of the deaths, in those parts of London which have suffered most severely from the disease, has been river-water polluted by drainage, but in other instances, there is reason to believe that some of the most destructive outbreaks of Cholera, which have occurred in particular groups of houses, have depended upon the use of well-water into which some impurities had either been carelessly thrown, or had drained or leaked through the adjoining soil.[1]

108. The remaining impurities, requiring notice, are living animal and vegetable organisms. But the more dangerous forms of these can only subsist in filthy and neglected wells. When the water, contained in these, becomes putrid or stagnant, as used to be the case in the Jail well at Ajmere, then both the organic kingdoms are represented in great profusion. The larger animalcules and confervæ may be removed by the native method of straining the liquid through a cloth. A thorough good filter is requisite to effect the separation of the more minute organisms.

109. 3rd. *Tank Water.*—This is rain water, which has been stored up in reservoirs, during the Monsoon. Provided these tanks are built of masonry, and kept in a complete state of cleanliness, the contained fluid is the most wholesome that can be used in Indian prisons. It is more free from inorganic and organic materials than river or well water, and is consequently a better

[1] *Circular of the Board of Health in England to the Local Boards of Health, dated 29th September*, 1857.

solvent of the food, during digestion, than either of these. But, if accumulations of filth of various denominations are allowed to collect in tanks, the fluid contained in them becomes rapidly contaminated by decomposing organic matter, the solution of which is greatly facilitated by the comparatively small proportion of earthy and alkaline salts originally present in it. Those tanks, which are bounded by earthen embankments, must always be more or less unwholesome from impregnation with animal and vegetable elements, as also from the presence of animalculæ, &c.

110. 4th. *Marsh or Stagnant Water.*—This noxious fluid abounds, during the rainy, drying up, and cold seasons, in all parts of this country. Its principal impurities are dissolved organic matter in great abundance, suspended algæ, infusoria,[1] and other offensive materials. It evolves sulphuretted,[2] carburetted hydrogen, and carbonic acid gas, all of which are poisonous. The disagreeable odour, which emanates from marsh or stagnant water, is, in great part, owing to the evolution of the two former, but chiefly to the first mentioned. The use of such water is not only injurious to man, but there is every reason to believe, that its employment is a fertile cause of the high mortality amongst the lower animals—such as cattle, horses and sheep, &c. The germs of guinea-worm, of hydatids, of tapeworm, and other entozoa, generate, maturate, and propagate in such

[1] *On Public Health.* By James Ranken, M.D., *Bengal Trans.*, No. 3, p. 318.

[2] Pareira *on Food and Diet*, p. 100.

a heterogeneously constituted medium. "When the French army entered upon the deserts which separate Egypt from Syria, the soldiers, pressed by thirst, threw themselves on their faces, and drank greedily of muddy water, and which, unknown to them, contained leeches (*sanguisuga Ægyptiaca*), having the form of a horse-hair, and the length of a few lines only. Many of them felt immediately stings or prickling pains in the posterior fauces, followed by frequent coughs, glairy spots, slightly tinged with blood, and a disposition to vomit, with a difficulty of swallowing, laborious respiration, and sharp pains in the chest, loss of appetite and rest, attended with great uneasiness and agitation. On pressing down the tongue of the individual first attacked, a leech was discovered, which was with difficulty removed by the forceps. Little or no hæmorrhage followed, and the patient recovered. Those which attached themselves to the posterior fauces, were removed by the use of gargles composed of vinegar and salt water."[1]

111. Many native empirics believe that fever is occasioned by drinking stagnant water. A strong argument in favour of this popular idea is the well-known power which water possesses of absorbing malaria.[2] Dr. K. Mackinnon, than whom there have been few closer observers in the Indian Medical Services, believed that stagnant water not only produced bowel complaints, in those who consume it, but also malarious

[1] *Op. cit.*, p. 94.

[2] *Lectures on the Principles and Practice of Physic.* By Thomas Watson, M.D. Fourth Edition.

fevers. And if it does really possess such a power, it can only be, by virtue of the malarious poison which it holds in solution, or in its molecular interstices. Marsh water cannot be much used, it is hoped, by our criminals. That it is employed, however, by a large number of exceptional groups of these miserable creatures, may be inferred from the fact that a considerable proportion of the prisoners are engaged, at out-door labour, in the execution of public works, in every Presidency. Many of these individuals are working in marshy localities, where such a thing as a well containing the pure article is not at hand, and they consequently make use of the nearest stagnant pool for drinking purposes. This is probably *one* reason why out-door labourers suffer more from disease, and die off in larger numbers in proportion to annual strength, than in-door labourers.

112. *Purification of River, Well, and Tank Water.* —With a view to separate all incidental and noxious impurities from river, well, or tank water, whether these consist of algæ, germs of entozoa, or other infusorial animals, organic or inorganic compounds, held in a state of mechanical suspension, a charcoal, sand and gravel filter might be used with immense advantage in our prisons. The filter containing these materials might be constructed of bricks and mortar, and made impervious by a good lining of chunam. From this filter a series of small openings would lead into a receiving reservoir. Over these perforations a layer of fine sand should be spread, about six inches to a foot in thickness, or more if requisite. Above this, a layer of

broken up charcoal, about a couple of inches in thickness, should be laid. Over this, another layer of sand should be placed, and last of all, a thin layer of fine gravel. Water, however much contaminated with merely suspended impurities, poured into the filter, would percolate through these porous substances, and be collected in the receptacle, in a fit state for drinking and culinary operations. "Filters," says Dr. Hathaway,[1] "might be constructed on a simple plan for each ward or cooking house, with much practical benefit." But it would be more economical to have one large filter of sufficient dimensions to purify the water consumed by any given establishment.

113. It does not appear that such a simple and well-known method[2] of purifying drinking water is *practically had recourse to, with anything like universality, in the Jails of this country.* If we except the Bellary Jail in the Madras Presidency, in which the water was filtered, during 1857–58, apparently to test the efficacy of the plan, as a preventive of dracunculus (which is very prevalent there), no mention is made, in the late official reports, of the wide-spread adoption of such an important prophylactic and conservative measure. Yet

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[1] *Report on the Punjab Jails, for* 1857.

[2] Dr. Mouat, however, recommended that "river and tank water, filtered through charcoal and sand, should be preferred in all cases where they are procurable, and where the river or tank is not a stagnant, semi-putrescent, unwholesome jheel, as at Jessore, where the epidemic (cholera) has been, and is, particularly severe" (*op. cit.*) It will be remembered that cholera epidemica was supposed to have originated at this plague-stricken spot, Jessore, in 1817.

every European resident, in this country, who may appeal to water alone and unadulterated with alcoholic adjuncts, such as Brandy, Whisky, Gin, Rum, and Old Tom, to supply fluid for the purposes of digestion, or of quenching his thirst, must be perfectly well aware, that the "pure crystal" is altogether unprocurable from rivers, wells and tanks, as a general rule, unless it has been previously subjected to the purifying process of filtration. But filtration cannot be depended upon, as a means of removing *nitrate of potash, chloride of sodium, and decomposing animal and vegetable matter held in solution.*[1] And it would be far too costly to submit fluid so contaminated to the process of *distillation.*

[1] By filtration through animal charcoal, water may be deprived of colouring and odorous matters which it held in solution; and by filtration through sand, both Berzelius and Matteuci (*Lectures on the Physical Phenomena of Living Beings*, p. 31, London, 1847) state that a saline solution may be more or less completely deprived of salt. Matteuci found that the density of a saline solution was reduced from 1·00 to 0·91 by filtration through a tube of about 26 feet long, filled with sand; but after some time the sand ceased to deprive the solution of salt. "It has been supposed by some that sea water, when passing up through a considerable stratum of sand, may be deprived of its salt as well as the impurities which visibly foul it. It is certain that, in many places, remarkably good fresh water is found by digging a few feet in the sand on the sea-shore, at a very short distance from the high-water mark. This is the case at Yarmouth, on the Norfolk coast; and the water procured from these wells is purer than any other that is found about the town; but there is no direct evidence that this is sea water filtered by ascent through the sand, since it may well be supposed to be fresh water, rising from a great distance within land, that has undergone the last degree of purification by its passage through the fine clear sand of which the soil is composed for a considerable distance off the sea-shore."—(Saunders' *Treatise on Mineral Waters*, p. 89 1800). Pareira's *Materia Medica*, Vol. I., p. 283, 1854.

Water known to contain any of these impurities in excessive proportions should be rejected as unfit for human use.

114. A few of the other simple methods that may be had recourse to, in special cases, for the purpose of purifying drinking water, may be briefly narrated in this place. *Boiling* destroys the vitality of *confervæ* and *infusoria*. By ebullition, the carbonic acid of the bicarbonate of lime is expelled. The resulting monocarbonate, being insoluble in water destitute of free carbonic acid, is precipitated. It is this deposit which collects in, and eventually occludes the spouts of our tea-kettles. *Distillation* is certainly the most perfect of all methods, that can be adopted, for securing the removal of all earthy, saline and organic compounds. This process would, however, be too complicated and expensive for introduction into oriental prisons. But, in many parts of the country, it might be adopted, with great advantage, by private individuals. *Alum* is often used to render water transparent and palatable. It acts in this way. The sulphuric acid of the alum deserts the alumina, to combine with the lime (of the carbonate of that base) existing in the water. The carbonic acid thus liberated escapes into the surrounding atmosphere, and the alumina being insoluble is precipitated in flakes, which carry down with them all suspended matters, such as mud, animalculæ, &c. The sulphate of lime thus formed is held in solution, and the water is, in consequence, increased in hardness and palatableness. By decanting the supernatant liquid a very

transparent crystal is obtained. It will be perceived that whilst, by the addition of alum, all suspended materials are carried down to the bottom of the vessel containing the water, the sulphate of lime is increased in quantity. Unless this earthy salt exists in great abundance, it probably does not operate as rapidly injurious. But, if it be present in large quantities, it must prove so, by diminishing the solvent powers of water during digestion. More than *two* or *three* grains should never be added to a quart, or *eight* or *twelve* grains to a gallon of water.

115. Professor Clark's patent process consists in adding lime to water. "The lime unites with the excess of carbonic acid in the water, and forms carbonate of lime (chalk), which precipitates along with the carbonate of lime held previously in solution in the water. The effect of this process is similar to that of ebullition. It has no effect on the gypsum (sulphate of lime) of common water, and, therefore, can have little or no influence in rendering hard water soft."

116. Roxburgh[1] states that the seeds of the *Strychnos potatorum* (*Vern. Nirmullee, Induga, Titancotta, Beng.* and *Hind.*, O'Shaughnessy), or *clearing nuts*, are used by the natives for the purpose of clearing muddy water. "One of the seeds is well rubbed for a minute or two round the inside of the vessel containing the water, generally an unglazed earthen one, which is then left to settle; in a very short time the impurities fall to

[1] *Flora Indica*, Vol. I., p. 576. (1832.)

the bottom, leaving the water clear, and, so far as I have been able to learn, perfectly wholesome. These seeds are constantly carried about by the more provident part of our officers and soldiers in time of war to enable them to purify their water. They are easier obtained than alum." "The nature of the action" (of these seeds), says Dr. W. B. O'Shaughnessy,[1] has not been clearly ascertained. It probably depends on astringency in the fruit."

117. Dr. Cornish[2] states, "the natives here (Coimbatore) say that the plant (*Pistia stratioides*) is well-known to make bad water drinkable, and I have lately had some of it placed in wells, where the water is bad, to ascertain if such is really the effect of it. It must not be forgotten, however, that, according to some Botanical authors (Brown, quoted by Roxburgh), the plant is at times acrid, and has been said to produce dysentery in those who drink of the water, at certain seasons of the year, particularly in Jamaica, where the plant abounds. The natives with whom I have conversed on the subject, do not regard it as in any way injurious, and from the fact of the Hindoo doctors using the bruised leaves as an emollient poultice, I very much doubt the probability of there being any acridity in the plant. It is quite certain that the inhabitants of the Old Fort, who drink water from the well where this plant grows, have never suffered from dysentery. That

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[1] *Bengal Dispensary*, p. 443. (1841.)

[2] *Report of the Inspector-General of Prisons, Fort St. George*, p. 33 (1857–58.)

an immense surface of succulent and coarse celled vegetation should exert a considerable influence in decomposing effete organic matter suspended in water, is from our knowledge of vegetable physiology beyond a doubt, but that a saline ingredient of the water should be removed or lessened by it, is a still more interesting circumstance. In all stagnant water exposed to atmospheric agency, there must be a certain proportion of animal and vegetable life, or else the water becomes impure and unfit for consumption. The *Pistia Stratioides*, I am induced to think, supplies the required amount of vegetable life, to decompose the effete matters resulting from the death of numberless *infusoria* and other animals whose habitation is stagnant water. Possibly, however, the vegetable matter may in time preponderate, and, if so, the introduction of a few tank fish would restore the equilibrium. Much may be learnt regarding the purification of water by observing the phenomena of animal and vegetable life in a fresh or salt-water aquarium."

118. The reader may think, perhaps, that I have dwelt at unnecessary length on this subject. If I have really done so, it is because I feel most strongly persuaded that the sickness and mortality, *cæteris paribus*, resulting from dyscrasia of the blood, fevers,—and more particularly from bowel complaints and pestilential cholera—ebb and flow, in prisons, with the increased and decreased purity of the water employed for drinking and cooking. Pure water is so essential to the preservation of health, that any deviation from the utmost

attainable purity of it is a step assuredly tending in the direction of disease and death. The fact that the dietetic allowances of the prisoners are necessarily regulated according to the principle of "total abstinence" from all spirituous liquors, does not detract from, but rather adds to, the force of this observation.

CHAPTER VI.

ON THE CONSERVANCY ARRANGEMENTS.

119. THERE are, perhaps, no circumstances, connected with the sanitary management of Indian Jails, which require such unremitting care and supervision, as the conservancy arrangements. Unless these are properly attended to, all the consequences of decomposing or fermenting fæcal matter must inevitably happen to those who are subjected to its noxious emanations. The gaseous products of human excreta, whether contained in the sewer, sink, neglected privy, filthy, open or untrapped drain, or the cesspool, are, according to the most eminent chemical authorities, sulphuretted and carburetted hydrogen, carbonic acid, sulphide of ammonium, nitrogen, as well as various organic living products. Dr. Odling, of Guy's Hospital, discovered the existence of an alkaline gas, ammonia, diffused through sewer air. And Dr. Herbert Barker has shown, experimentally, how detrimental sewer air is to animal life.

120. "For the purpose of experiment, Dr. Barker selected a large cesspool, which received, together with the animal excreta, the liquid refuse of an inhabited

house. The cesspool was full, and had at all times so bad a smell, that during hot weather the vicinity was scarcely tolerable. The inhabitants of the house, however, had not for many years suffered from any epidemic; nor did the near presence of the sewer seem to affect the general health.

"Dr. Barker had built close by, and nearly over this sewer, a small room. Two gutta-percha tubes, one inch in diameter, were carried down into the cesspool through its upper walls, and terminated in two large inverted funnels, a few inches above the surface of the sewage matter. The other ends of the gutta-percha tubes were in the small room, and were so constructed that they could be opened or closed at pleasure. By a bellows attached to the free end of the one or other of the tubes, he was able at any time to draw off the sewer air and subject it to examination. He did this on numerous occasions—at times when the weather was very hot and the neighbourhood of the sewer most offensive—at times when the temperature was very low, and the place inodorous. As a general rule, the sewer gas yielded neither acid nor alkaline reaction, but sometimes the reaction was alkaline. At all times, mixed with common air, carbonic acid gas, sulphuretted hydrogen or sulphide of ammonium, were detectable. When the reaction was alkaline, ammonia was evidenced. He could detect no other products in sewer air. He tested for evidence of cyanogen compounds, without any affirmative indication.

"When this inquiry had progressed for several

weeks, he tried the influence of sewer air on animals exposed to it for a long time. For this purpose, he had made a chamber of wood and glass, with a cubic measurement of 5,832 cubic inches. One of the gutta-percha tubes was introduced into it at the lower part; from the upper part he carried a tube in the form of a small chimney. At the point where the long tube piping from the chamber made a right angle upwards, it expanded into a conical box, in which a lamp was placed, so as to create, when alight, a constant upward draught. The whole played well. When the chamber was closed and the lamp arranged, a current of the sewer air was kept steadily passing through it. Dr. Barker also attached a pair of bellows to the chamber, in such a way that he could at any time remove the air by working them, and subject it to investigation, without interfering either with the experiment which might be progressing."

Dr. Barker subjected three dogs and one mouse to cesspool air, and having thus ascertained what was the effect of long exposure to it, he exposed animals, in the same chamber, to certain percentages of such of the individual gases as had been found, at various times, emanating from the cesspool.

His conclusions are as follow:—

(i.) "In the first place, it cannot be doubted that cesspool emanations are, when steadily inhaled, poisonous. The dogs subjected to the cesspool air were all more or less affected. The symptoms were those of intestinal derangement followed by prostration, heat of

the surface of the body, distaste for food, and those general signs which mark the milder forms of continued fever common to the dirty and ill-ventilated houses of the lower classes of men.

(ii.) "The peculiar poisonous action of sulphuretted hydrogen is well illustrated in these experiments. The symptoms produced even by the same dose differed in degrees in different animals of the same class, the one animal dying from the effects of a dose, which was insufficient to do more in the other than produce dangerous symptoms. The *symptoms*, arising from sulphuretted hydrogen, are well marked, and may be considered specific. Vomiting and diarrhœa are the first and most prominent symptoms. The latter is painful; the vomiting difficult and exhausting, and eventually there is insensibility and entire prostration. When the dose of the poison is at first very large, the prostration and insensibility are immediate. The *pathology* following such poisoning is definite. If the death takes place quickly, the pathological evidence is the evidence of asphyxia; if the poison is long breathed in diluted doses, the pathology is modified, the fibrine of the blood is separated, and the heart is slowly clogged up with fibrinous depositions. The *dose* of sulphuretted hydrogen, required for the production of the specific symptoms, is tolerably well shown. It is clear that so little as 0·428 per cent. is a dose absolutely and rapidly poisonous; that so little as 0·205 per cent. may be fatal; and, lastly, that so minute a dose as 0·056 per cent. is sufficient to produce serious symptoms, eructa-

tions, tremors, rapid and irregular respiration, extraordinary rapidity of pulse, and diarrhœa.

(iii.) "The effects of sulphide of ammonium, while they differ from those produced by sulphuretted hydrogen, are in themselves sufficiently distinct. Vomiting is a symptom of this poison, without purging, but occasionally with tenesmus. When the dose is very large, death occurs speedily, with quickened and laboured respiration. When the administration is kept up in small doses for many hours, the symptoms are those of excited circulation and thirst, followed by rapid sinking. The surface of the body, from being unusually hot, becomes cold. The tongue is protruded, dry, dark and cold. There are constant jactitation of the limbs, subsultus tendinum, feeble, quick pulse; and ultimately death, which may occur even some hours after the animal has been removed from the poison, and placed in the open air. The *pathology*, after death, from sulphide of ammonium differs from that which follows the administration of sulphuretted hydrogen. When the inhalation is prolonged, and the death is gradual, the alimentary mucous surface is changed. The mucous coat is injected and softened in patches. The blood shows no fibrinous separations, but is dark, and either feebly coagulated or entirely fluid. The blood corpuscles are also much dissolved and changed, and there is congestion of fluid blood in all the vascular organs. The *dose* of sulphide of ammonium, required for the production of serious symptoms, is difficult to calculate; and this, from the fact that when

the vapour of sulphide is diffused through a confined space, in which an animal is breathing, there is quickly a deposit on the floor of the chamber of the white bicarbonate of ammonia. This deposition is so rapid, indeed, that the effect of the poison is very quickly lost, so that constant renewal is required, and the calculation of the dose is necessarily rendered obscure, since the animal is not breathing the same dose for any two minutes together.

(iv.) "In poisoning by carbonic acid gas, the respiration suffers first; there is prostration; and, if the inhalation is prolonged, diarrhœa. The effects vary with the dose. In large doses, insensibility, coma, and asphyxia, are the results. The *pathology* varies. While congestion of the lungs is commonly noted as the leading pathological sign, it is clear that when the gas has been long inhaled in small quantities, this rule is not without its exception; for, in one case, the lungs were found of a bright vermilion colour, and free from congestion. The effect of carbonic acid on the blood is definite; it does not produce the fibrine deposit like sulphuretted hydrogen, nor the complete fluidity of sulphide of ammonium. But, there is feeble coagulation, and sometimes a dark colour even in the arterial blood. If this gas be breathed continuously for a long time in a very minute dose, the brain suffers from congestion of blood, and the mucous membrane of the stomach is injected and reddened. When the gas has been breathed for a long time in small quantities, so as not to produce insensibility, the effect does not pass off so speedily on

placing the animal in the open air as is generally believed. In one experiment with carbonic acid, the animal, after being exposed for two hours to an atmosphere in which he breathed from the first two per cent. of carbonic acid, was left (not apparently suffering much) with pure air entering freely into his chamber. Yet he died after all. The smallest *dose* of carbonic acid required to produce dangerous symptoms, cannot be determined absolutely from the experiment of placing an animal in a closed chamber and introducing the gas, inasmuch as the gas is also streaming off from the animal itself. Dr. Barker thinks, however, that the inference is quite fair, that from one to two per cent. of this gas is sufficient, when long inhaled, to produce decided symptoms of imperfect oxydation of the blood, and all the after prostration incident to such interference with the primary act and principle of life.

"The symptoms which have thus been noticed as resulting from the inhalation of sulphuretted hydrogen, sulphide of ammonium, and carbonic acid, are sufficient to account for the effects arising from cesspool effluvia, without seeking for any further product from such emanations. Comparing the experiments with cesspool air with those in which separate gases were employed, the inference seems clear, that the symptoms, arising from the inhalation of the cesspool atmosphere, were due mainly to the presence of a small amount of sulphuretted hydrogen, which gas was always present. If the experiments with the cesspool air be placed side by side with those in which sulphuretted hydrogen, in the

proportion of 0·056 per cent. was administered by inhalation, the analogy between the two sets of results will be sufficiently unmistakeable."[1]

121. Sanitarians, in all civilized countries, have long been acquainted with the pernicious nature of the effluvia exhaled from cesspools. Doubtless the medical records of Indian prisons contain many examples of the needless pollution of the air by analogous collections of filth. Perhaps, there is no exaggeration in calculating the cubic measurement of sewage, in the aggregate of all the prisons in the empire, at the present time, at some hundreds of thousands of cubic yards.

122. If evidence were required to show how jail air, in this country, must be poisoned by sewage emanations, the reader will find it, in great profusion, in Dr. Mouat's Report for 1855–56. We are there told that, at Patna, the conservancy arrangements of the prison were bad, the filth falling into a deep drain, through which it was washed in the whole length of the building, thus polluting every place in its passage; that, at Sarun, the chief defect of the prison was the drainage, which could not be well improved with the existing buildings; that, at Shahabad, the conservancy arrangements were extremely bad and the drainage defective; that, at Monghyr, the conservancy was exceedingly defective; that, at Tirhoot, the sewerage was of the worst and most unhealthy description; that, at Purneah, the

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[1] Ranking's *Abstract*, Vol. XXVII., p. 7, January, June, 1858. Quoted from the *Sanitary Review*, April, 1858.

drainage and sewerage were condemned; that, at Rajshahye, the drains and privies were bad; that, at Rungpore, the drainage was defective and the sewerage unwholesome; that, at Dinagepore, the sewerage was bad; that, at Dacca, the sewerage was abominable; that, at Furreedpore, the conservancy arrangements were not as good as they might be; that, at Sylhet, the conservancy arrangements were very defective; that, at Mymensingh, the sewerage was defective; that, at Backergunge, the sewerage was objectionable; that, at Chittagong, the sewerage of the place was essentially unwholesome and objectionable; that, at Burdwan, the sewerage and drainage were defective; that, at Hooghly, the drainage and sewerage of the jail were generally bad; that, at Howrah, the drainage and general arrangements were defective; that, at Bancoorah, the sewerage was not approved; that, at Beerbhoom, the sewerage was bad; that, at Hazareebagh, the jail was surrounded by a filthy ramp and ditch, and the drainage was defective; that, at Lohardugga, the conservancy arrangements were bad; that, at Kamroop, the drainage was defective; that, at Nowgong, the drainage was condemned; that, at Durrung, the surrounding swamp required drainage; that, at Luckimpore, the position of the jail was swampy; and that, at Akyab, the conservancy was unwholesome. A more sweeping denouncement of the conservancy and drainage of a large portion of the jails, in Lower Bengal, could not have been pronounced; and, considering that it is here given almost in the identical words used by such a distin-

guished physician as Dr. Mouat, the accuracy of the record may be regarded as unquestionable.

123. During 1855–56, the mortality to mean average strength was 103·07; during 1856 (which included a part of the previous year), 94·23; and, during 1857, 120·99 in 1,000 in fifty-five jails. So that, notwithstanding the above-mentioned condemnation of the sanitary arrangements, real and visible progress can scarcely be said to have been established down to the close of 1857.

124. Things do not appear to be much more commendable in the Bombay Presidency. Mr. Bettington, in his Report, for 1854–55, states that, at Broach, "four times within the last ten years the mortality has risen to 25 per cent.; nor is there any present improvement within the last year." This jail "is not overcrowded; it is not badly ventilated." But he continues, "the principle on which the drain in this jail is constructed is radically bad; a most offensive effluvium proceeds from it; and from personal observation and careful inquiry, I am led to the opinion that the air of the jail is decidedly unwholesome and infected by the drain." Again, "the site of the present hospital is decidedly bad, both because it is in close proximity to the main drain, which has a large untrapped opening near the hospital, from which a most sickening effluvium proceeds; also because, to the north, the hospital is over-topped by high ground and houses, the basements of which are nearly as high as the roof of the hospital." The Surat jail affords another illustration of the bad

effects of an expensive system of drains; the drain occasionally infects the whole neighbourhood, and cannot fail to injure the health of the prisoners." We are also informed, in the same official report, that, in the Ahmedabad jail, the drains were badly kept; that the fumes of ammonia in some of the cells were "quite insufferable;" that a privy, for 500 prisoners, was situated in the very centre of the jail; and that the cesspools were emptied "at long intervals." The olfactory organ of the inspector—that sentinel ever on guard to protect the lungs from contact with noxious gases—was sorely outraged by the ammoniacal odours of the jail cells at Ahmednuggur.

125. Turning to the southern division of the empire, we find, from the Director-General's *Report on the Sanitary Condition of the Jails in the Madras Presidency*, for the year 1857, that the medical officer of the Masulipatam jail complained of the "very offensive effluvia" which "pervaded the various cells, occasioned by the ill-constructed privies which continue still in use." And Mr. Rhode (the inspector-general of prisons) observed that, on inspecting the jail at Calicut, "the inconvenience from the construction of the hospital privies noticed at my last visit was now complained of," for the amelioration of which he recommended that "a metal pipe with a flange secured to the floor should be placed at each end of the sink, and the pipe carried through the roof to carry off the foul air."

126. In 1852 Mr. Thornhill stated that the con-

servancy arrangements introduced by his predecessor (Mr. Woodcock) had proved "eminently successful," and that these combined with the means of ventilation, which had been provided in each barrack, "rendered an early visit to the jail no longer one of the most disagreeable duties which a magistrate is called on to perform." The mortality to strength, during that year, was 45·6 per 1,000 in thirty-three jails. But, during the following year (1853), the results were not so satisfactory, for, although the number of admissions into hospital had decreased, notwithstanding the larger number of convicts in confinement, the ratio of deaths had risen to 60·5 per 1,000.

127. Dr. Hathaway, in his Report for 1857, states, that "the necessary outside the women's wards (at Dera Ismael Khan) is contrary to plan, and should be removed; it is both unsightly and offensive."

128. But, it must not be supposed, that the above meagre detail of the utter defectiveness of the conservancy department, in some of our jails, contains more than a mere tithe of the real state of affairs. And as my own experience warrants the justice of this observation, I cannot refrain from demonstrating, as emphatically as possible, the immense sanitary advantages that may be immediately derived from the systematic introduction of radical improvements. With a view to accomplish this important object, I will cite two instances, showing the great benefits that have been obtained at Ely and Liverpool from sanitary improvements. I quote these from the *Quarterly Return of*

the Registrar General, dated the 28th of October, 1859.

129. "(i.) Following the waters of the hills of Buckinghamshire down through the fens, we arrive at Ely. Here a remarkable example is found of the salutary effects of simple sanitary measures, of which every town in the kingdom may have the advantage. Ely stands, with its lofty cathedral, on one of the old fen islands. It is a small city of 6,176 inhabitants (1851), and is in the neighbourhood of the low lands, where the great system of modern embankments and draining were commenced by Vermuyden, one of Cromwell's colonels of horse. The Bishop of Ely, in ancient times, went in his boat to Cambridge. And the country around, like all our old marshes, is still imperfectly drained. The atmosphere here has, therefore, no natural advantages. The Public Health Act was introduced in 1851. The Ely Board of Health was founded. They set on foot two great works; one for supplying the town with water, the other for carrying off that water through every house clear out of the town. The public works were completed at the end of 1854; and the houses were gradually connected with the public sewers, leaving, however, at the end of 1857, 200 in 1,200 houses out of connection. Mr. Marshall, the Superintendent Registrar of the district, in an able paper, shows the result of this great experiment. In the seven years (1843–49) before the Public Health Act was in operation, the mortality was at the rate of 26 deaths annually to every 1,000 living; in the seven subsequent years (1851–57),

when the sanitary measures were only partially carried out, the mortality fell down to the rate of 19 deaths annually to every 1,000 living. The mortality in the last two years (1856–57) was at the rate of 17 in 1,000. In the same periods the surrounding rural parishes underwent some improvement; but the improvement of the city has advanced so much more rapidly, that its mortality was, in the last two years, 4 in 1,000 less than the mortality of the surrounding country. The young people, under the age of thirty-five, have enjoyed remarkable immunities from disease, and the benefit will be transmitted to succeeding generations. The two chief sanitary works, which have been completed, are the introduction of water taken from the river of inferior quality, and the *destruction of* 4,000 *cubic yards of cesspools — nearly* 4 *yards to each house.* The Surveyor, Mr. Burns, exclaims with justifiable pride, 'there is still a number of cesspools remaining, and the sooner they are done away with the better. After this is done, I may truly say that I found Ely a city of cesspools, filth and sickness; but I shall leave it a city of drains, health and cleanliness, and that is something to be proud of.' Yes, Mr. Burns, you may well be proud of your work. Pau in the Pyrenees, to which British invalids resort for health, experienced a mortality of 28 and 23, when you had reduced the mortality of Ely to 17 in 1,000."

"(ii.) Liverpool lies on theshore of the fresh, deep, wide Mersey, which is lined by her magnificent docks, and the houses rise from the river, over the red sand-

stone heights, in long stretching lines. Lancashire and Cheshire cover the plains and hills behind the queenly town; before her are Ireland, America, and the ocean which her ships ride over, carrying foreign produce or the manufactures of the north to and from the various regions of the world. The place is well chosen for health; and, in *Gough's Camden* (Ed. 1806), Liverpool is said to be celebrated for 'her beauty and populousness.' Yet it was found and published in the first Registration Report that the mortality of the population of this district was in the latter half of 1837, at the rate of 39 in 1,000 annually; while the population of West Derby, containing, with other parishes, the outlying parts of the borough, died at the rate of 25 in 1,000. The strong contrast between the contiguous places, and the subsequent discovery, that Liverpool was one of the unhealthiest parishes in the kingdom, excited surprise as well as regret in the public mind. A local association was formed of some of the best people; and the causes of the mortality were investigated, and were afterwards made known by Dr. Sutherland in a series of lucid papers. Little, however, was done; the prophets had been crying in the desert, and in 1846 the mortality grew still more threatening. Cholera raged fearfully in 1849. Steps were now taken to carry out sanitary measures, under the direction of Dr. Duncan, and the other officers of the town. The sanitary school of Liverpool subsequently furnished some of the most efficient members of the commission, which did good service in the East. Still, it is to be regretted, that the

health of the great bulk of the population has improved but slowly. Liverpool has a good supply of water; but it is still infested by cesspools, including under this name the filthy Lancashire midden; and the drains pour their contents into the dock basins, which exhale a malarious and sickly air over the people. The mortality, in the borough of Liverpool, was at the rate of 29 in 1,000, in the year 1857; much good, therefore, has been done since 1837; thousands of lives have been saved. Still Liverpool has not yet, like Ely, taken the 'bull by the horns.' Or why should not the mortality be as low as 19 or 17 in 1,000? What natural advantage has Ely, taking one thing with another, over Liverpool? If Ely has had thousands of cubic yards of dirt removed, Liverpool has hundreds of thousands of cubic yards to deal with; but her measures are commensurate with her duty. Mr. Newlands can do for Liverpool what Mr. Burns has done for Ely. The cesspool, the midden, or call it what they may, for it is still the same, is the chief destroyer of the Lancashire population. Crowded dwellings, vice, want, do a part of the mischief; but in Liverpool the cesspool destroyed a large proportion of the 6,418 people who last year perished in excess of the numbers who would have died at the rates prevailing in country districts. The tender-hearted may shed natural tears over them as they lie in the cemetery. Abolish the cesspools of Liverpool, and you immediately save the lives of thousands of people. Yet the parties, who have exerted themselves to put a stop to capital punishment, have not been aroused by

the ruthless destruction of men; and no Beccaria has written on these, crime and punishments. A living poet, in one of his last poems, exclaims—

> 'Ah, it is the gallows-tree!
> Breath of Christian charity,
> Blow! and sweep it from the earth.'

But what number of lives did the gallows-tree take away in 1857? Thirteen in all England and Wales; two only in Lancashire. And these were the lives of murderers, who were put to death for their crimes, after the most deliberate judicial inquiry. But the 6,814 men, women, and children of Liverpool were destroyed cruelly in that year without discrimination. Of the cesspool, rather than of the gallows-tree, a wiser muse will sing—'Sweep it from the earth.'"

130. Simon, Farr, Letheby, Snow, Barker, Odling, a host of medical officers of health, and statisticians, in England, and Ranald Martin, Kenneth Mackinnon, Norman Chevers, Lownds, and others in this country have done their utmost to convince the public of the deleteriousness of sewage matters, when allowed to accumulate and undergo chemical transformations in or near the habitations of human beings, and not without abundant fruit in the old country. Progress, however, has been tardy everywhere in India; and our prisons do not form an exception to the prevailing rule.

131. The inspectorial officers of jails have manifested considerable anxiety on this head. But so long as their recommendations for amendments are not strictly and promptly complied with, by officers in

charge of jails, it cannot be expected that *true*, practical sanitary reform will be very speedily carried into execution. The Inspector may, possibly, by dint of great exertion, visit the major portion of the prisons, under his jurisdiction, once a year. But how are his simple sanitary recommendations attended to, during the remaining balance of 364 days of each annual revolution? The high rates of mortality depicted in a previous chapter echo not at all satisfactorily. "The cesspool, the midden, or call it what they may," says Dr. Farr, "is still the chief destroyer of the Lancashire population." And who can deny that the neglected privy, the cesspool, the stinking drain; in other words, liquid and solid human excretions in process of decomposition, are among the chief destroyers of the criminal population of Indian prisons?

132. Now, how are all these abominations to be permanently and effectually swept away from our jails? by sewers, by closed drains, or by manual labour? Jail sewers, or closed drains, may be good things, provided they are well made, have a good outfall and water-fall, and are frequently enough and sufficiently flushed, so that no accumulation of filth is allowed to collect within them. But in the absence of systematic flushing, of proper construction and incline, sewage collects in them in great abundance; the adjacent soil becomes saturated with it, and up-draughts are continually playing; and thus it is, that the wells become contaminated by the percolation of the soluble sewage residue through the soil, and the atmosphere tainted with the most dele-

terious emanations—conditions which favour the generation of epidemic cholera and high mortality rates from it, when once it has gained a footing in our jails. It would be very costly to provide an impervious system of sewerage for our jails, and, if we are to have sewers at all, nothing short of this, an unfailing incline and repeated flushing, will save the atmosphere from the dangerous impurities, occasioned by upward currents, on the one hand, and the drinking water from contamination by percolation through the soil, on the other. Even if such a complete set of sewers were constructed, in such of our jails as may be susceptible of their application, with impervious walls and trapped openings, and with every desirable advantage for their purification, it is doubtful, since European management is not always made available, to see that they are properly regulated, whether sewers, or closed channels or drains are things to be recommended, at present, for Indian jails. With a corrupt and apathetic subordinate executive, to which, under existing arrangements, the management of these sewers would have to be mainly entrusted, the best system of sewerage that was ever invented might, if neglected, become a positive nuisance and a fertile source of sickness and mortality. The flushing would be left in abeyance, the traps would be placed in any situation but that for which they were originally intended; and what was designed, at great cost, for the purification of the air and water, would become a permanent sink, or cesspool, or ill-concealed midden of the most unwholesome description. I think, it will be

acknowledged that, with existing native establishments, sewers in Indian jails may be viewed as *unnecessary, costly and sickly superfluities.*

133. The best plan that can be adopted for the purpose of ensuring the constant removal of animal excretions, whether solid or liquid, is undoubtedly the employment of manual labour,—in short, of a sufficient number of professional scavengers. In order to enable these sweepers to perform their work efficiently, the floor of each privy should be constructed of the most impervious materials that can be procured. There should be no such thing as a drain or channel leading from it; and every privy should be built in the least offensive situation,—most assuredly not in the centre of a prison, containing 500 souls, as at Ahmedabad,—nor within a few feet of the well of a prison, for 200 criminals, as was the case in my time, at Ajmere. On the floor of every seat, a receiving vessel, fitting closely to the compartment, should be placed to intercept the fæcal and urinous excreta. Underneath this receiver, a layer of fine sand should be spread, to absorb and deodorize any liquid matter that may fall over its edges. The size of the privies, the number of seats and receivers, should be proportioned to the number of individuals to be provided for.

134. After the prisoners have been locked up at night, the sweepers should repair to these privies. They should take out every receiver that may have been made use of. The sand should be removed and placed over the contents of each vessel. And the floor of each seat

should be scrupulously cleaned and dried. The vessels with their contents should now be expeditiously carried beyond the limits of the prison.

135. Having thus transported the ordure outside the building, the question how to dispose of it then arises. Dr. Hathaway's plan is probably the best that can be adopted. He says, "Cesspools being found by experience to become permanent nuisances, the best way of disposing of refuse matter from the jail, is to have a trench dug at the farthest end of the garden, into which the filth should be thrown every day. The trench, which should be two feet in depth, should be kept ready dug, and the necessary space required for the reception of each day's refuse matter should be filled in every evening, covering it over with an embankment of two feet of earth on the top, to prevent the possibility of any effluvium during the rains. These trenches have now been in use in most of the jails of the Punjab for several years, and are found to answer admirably; perfect decomposition is effected within a period of six months, and no other manure is required for the soil." The refuse matter having been consigned to the trench, in the most suitable part of the garden, in those jails provided with such a useful *addendum*, or in some spot appointed for the purpose, in those prisons not so favoured, the receiving vessels should be cleaned, and be replaced in the necessaries over a layer of the finest sand procurable.

136. After the criminals have been released from their sleeping wards in the morning, it is presumed that

a certain period of time is allowed them to take a meal, and to perform their devotions at the shrine of Cloacina. These being accomplished, labourers are told off to their respective occupations, either within or without the precincts of the jail. Immediately they have departed, the sweepers should repeat the cleansing operations above described, and again, if necessary, after the mid-day rest, which is usually granted to labouring prisoners.

137. But how are we to obviate the pollutions of the sleeping ward during the periods the prisoners are locked up at night? Before answering this question, it may be as well to state, that prisoners are usually confined according to the condemned principle of association, and according to an imperfect system of classification, in double or single rows; the former being adopted when the apartment is broad enough; the latter, when it is narrow; that it is the custom to have metal or earthenware night-pans placed down the centre of the broad wards, and along one of the longitudinal walls of the narrow barracks, for the purpose of collecting the liquid and solid refuse that may be deposited in them during the night. This practice cannot be too severely condemned. Just let the sanitarian conversant with the fearful rapidity with which urine and fæcal matters, in this country,—especially during the hot, rainy and drying up months,—undergo decomposition, and evolve the most deleterious exhalations, picture to himself forty or fifty, or more human beings, locked up every night in a close and ill-ventilated barrack, and compelled to breathe an atmosphere not only largely im-

pregnated with carbonic acid, and pulmonary organic emanations, but with ammonia, sulphide of ammonium and sulphuretted hydrogen, issuing forth from gallons of urine and pounds over pounds of solid excrement, and then, particularly, after having carefully studied the results of Dr. Herbert Barker's experiments, he will coincide with me in stating, that the sooner such arrangements are abolished, the better it will be for the health of the individuals always liable to be injuriously affected by them.

138. When I held the medical charge of the Ajmere Jail, I personally witnessed the evil effects produced by these horrible night-pans. The wards of this prison are narrow, and can only contain single rows of prisoners. The night-pans were arranged along the foot of unoccupied space stretching the whole length of the barracks. These vary in length, and accommodate from twenty to forty prisoners, huddled together shoulder to shoulder, or nearly so. In order to observe practically the working of this system, I made it a point to visit the sleeping wards on numerous occasions, at the time, when the locks and bolts were undone, in the morning, and I invariably found the atmosphere issuing from them loaded with odours of the most sickening and unhealthy description. The air was so contaminated with sulphuretted hydrogen that papers dipped in acetate of lead solution, were immediately blackened, and so fearfully charged with carbonic acid gas that a pellicle of carbonate of lime soon began to form on the surface of lime-water placed in saucers.

When passed through the lime-water by a few strokes of a common spring, the previously transparent liquid was rendered opaque and milky by a precipitate of carbonate of lime. The ammonia, which escaped from the decomposing urine, had issued in such quantities, that the walls were literally covered with a crust of bicarbonate of ammonia.

139. But to answer the question which has been put, — there cannot be a doubt that the evil effects, arising from the contents of these noxious night-pans, might be completely averted by their abolition, and the substitution of a well-constructed privy for each barrack, provided with a self-shutting spring door placed in the most convenient situation. A few vessels for the collection of urine might be placed in this necessary, and the latrine should be supplied with a receiver, for the reception of the night-soil. As these privies would only be made use of during the night, they would require cleaning out once a day (in the morning), according to the directions already given for the management of the General Privies.

140. Provided these recommendations were carried out, with such vigour, as to have the privies thoroughly cleansed three times a day, three most important objects would be gained. 1st. The atmosphere would be kept free from sewage impregnations. 2ndly. The well water, used for drinking and cooking, would be saved from sewage admixture. And, 3rdly. The sewage would be utilized in the manner best calculated to neutralize its injurious properties, and to make it an eligible

manure for cultivation. No guano is so rich in the constituents, which are essential to the composition of a good and efficient manure, as human guano. "Science," says Dr. Farr, "has demonstrated that fermenting human excrement is a poison in and near human dwellings; and chemistry has shown that the same elements, in other states, become grasses, grains and flowers by the natural magic of the earth. When, therefore, our jail guano can be so easily utilized, is it not a pity to throw it into neglected sewers, to discharge it into running rivers by a system of imperfectly constructed drains, to allow it to rot in blind sinks and cesspools, and to fester in the crevices of malconstructed privies—to infect the atmosphere the prisoner breathes—and to poison the water he drinks? When human guano is utilized by applying it to its natural deodorizer and employer, the soil, it becomes absorbed by it, and not only a source of luxuriant vegetation, but a source of health and wealth. It is the mode prescribed in the Mosaic Ritual, which contains, amidst the mysteries of religion, so many sound, practical sanitary enactments. Revelation and reason alike point to this as the mode of applying human excrement, which shall deprive it of all noxious qualities, and devote it to its legitimate use; and until this use is made of it, it will be an incessant and increasing source of expense and danger." [1]

[1] *Medical Times and Gazette*, September 1st, 1855, p. 217.

CHAPTER VII.

ON THE DRAINAGE.

141. Open drains, designed to carry off rain water, are, generally, as at Patna, instrumental in extending the superficial measurement of sewage or cesspool matters. When they are made of "puckah" masonry, they are liable to be so utterly neglected as to become permanent nuisances of a most unwholesome character; when "kutcha," they cannot but prove injurious. "No 'pucca' drains," says Dr. Hathaway, "are required in any part of the jail; they are costly, and become offensive, from being improperly made use of by the prisoners." And deep kutcha drains, in this country, are most dangerous contrivances. But such devices are unnecessary within the precincts of most Indian prisons. Instead of either kind of drains, I would recommend the following system of drainage, intended to carry off surface water beyond the interior of those prisons, in which the necessary waterfall can be ensured.

142. The requisite levels having been taken, during the cold season, a drain, three feet in depth by one in breadth, commencing from the most eligible part of the

outer wall, and terminating in a good outfall, well away from the jail, should be dug. There should be an excellent descent or incline, from all parts of the building, if possible, towards this cutting, which should be carried several hundred feet beyond the outer wall of the jail. These *desiderata* having been guaranteed, the drain should be filled up to within a few inches of the surface with broken stones. Where these may not be procurable, broken bricks and brushwood, laid down in alternate layers, will form an efficient substitute. The few inches at the top should be covered over with soil or gravel. Intersecting this rubble drain at right angles, or at the most convenient angle possible, another should be constructed with a proper incline. This would run along the interior of the outer wall, and communicate with the main channel, underneath the outer wall, at the point of intersection. At each extremity the depth of this latter drain might be 2½ feet by 10 inches in width, to be gradually deepened, as the point of communication with the main drain is reached, at which situation the depth of the two channels would correspond or be nearly equal, *i. e.* to 3 feet. This having been accomplished, there should be constructed a series of tributary drains, throughout the entire site of the jail, all having a sufficient incline into the cross drain. These should be about 10 feet from each other, and all, together with the cross channel, should be filled up in the same manner as the main drain. Modifications of this system might be had recourse to, to suit different localities. For instance, owing to pecu-

liarities of position, some jails might require more than one principal outlet, for the surface drainage. But the principles involved will remain unaffected, the ends to be accomplished always being to carry off, as rapidly as possible, the surface water, and to prevent the retention of moisture in the soil, on which jails are built, without encountering the evils of many open drains, whether puckah or kutcha. The soil excavated in the construction of this system of rubble drains, might be usefully employed in improving and raising the levels of the yards, &c. This plan might be adopted, with great advantage, in the majority of prisons. But, in Bengal, Behar, Orissa and Assam, every now and then, a jail will be met with, which it would be impossible to drain, except by very costly arrangements. Indeed, Dr. Mouat states, that some of these buildings are situated on sites utterly insusceptible of any system of drainage. All those jails situated on the high banks of rivers offer every facility for the practical application of the scheme herein suggested.

143. Now for a brief summary of the many advantages that may be gained from this proposed scheme:— 1st, its simplicity is such that it may be carried out by prison labour under proper supervision; 2ndly, its efficiency cannot be doubted, provided the levels are so adjusted as to avoid the contingency of attempting to make the water run up-hill; 3rdly, it would avert the continual soaking of the soil by sewage matter, for this, in the event of the persistence of defects in the conservancy arrangements, would be drained off by percolation

through easy channels, beyond the confines of the jail; 4thly, it would render unnecessary a costly system of puckah drains, or an inefficient and noxious set of kutcha ones—at least to a very considerable extent; 5thly, by preventing the retention and stagnation of the surface water, during the monsoon, it would diminish the risk of malaria being generated—especially if all rank vegetation, and inequalities in the surface soil, were assiduously abolished; 6thly, by increasing the dryness of the atmosphere, and diminishing the amount of organisms floating in it, as well as other noxious emanations, it would tend to lessen the degree of the "epidemic constitution" of the air, during the prevalence of pestilential diseases; 7thly, by expediting the removal of liquid matter, together with any organic impurities it may hold in solution, the contamination of the well water, by the percolation of sewage elements into it, would be altogether avoided. In short, whilst the atmosphere would be rendered more wholesome, for purposes of respiration, the drinking water would be kept free from one fertile source of impurity, and be better fitted to minister to the digestive and other vital operations within the body—two points of essential importance to the health of the prisoners, it will, I feel confident, be readily acknowledged.

144. Dr. McLennen, the late distinguished Physician-General of the Bombay Army, and Colonel Crawford, Consulting Engineer to the Government of Bombay, concurred in the opinion that open drains, in this country, should be of the most rudimentary descrip-

tion possible; in which opinion, Mr. Bettington, the Inspector-General of Prisons, coincided, after having witnessed the failure of a complicated and expensive system of open and closed drains with untrapped openings, at Broach, Surat, Ahmedabad, and other prisons. There should not be a single open channel in an Indian jail that can be dispensed with, and those which must be constructed, can only be viewed as necessary evils. "A shallow surface drain," says Dr. Hathaway, "made on the ground with well-rammed 'kunker,' or broken bricks, is the best means for carrying off the rain water, and it can be effectually cleansed or renewed from time to time without expense." There must be a certain proportion of shallow channels to facilitate the removal of monsoon water. There must also be a drain to carry off the fluid expended for bathing purposes. But on no account ought these to be employed for the commission of nuisances by prisoners, guards, or other jail servants. The water flowing along these rudimentary drains would be disposed of in two ways. A portion of it would percolate through the soil into the rubble system of drains above suggested, and be conducted thereby beyond the boundaries of the prison; whilst the chief part of it might, when necessary, be employed for irrigating gardens wherever they exist.

CHAPTER VIII.

ON DEODORIZING AGENTS.

145. With good drainage, perfect conservancy arrangements, and the proper utilization of all "refuse matter," by employing it, as rapidly as it is produced, as the natural fertilizer of the soil, there would be little need for the employment of deodorizing materials, to destroy the effluvia arising from open and deep drains, sinks, closed drains with untrapped openings, cesspools, sewers and privies. But, in the absence of these important *desiderata*, great benefit may be derived from the judicious use of such agents. The modes, in which deodorizing agents act, render it convenient as well as useful to deal with them under three distinct heads:—

1st. Those which destroy putrid gases mixed with sewage by decomposing and fixing them in an involatile form, and by precipitating and subsequently decomposing and fixing solid organic molecules, thereby prohibiting their conversion into dangerous gases; 2ndly, those which attack and decompose the gases floating in sewer air, and convert them into innocuous chemical compounds; 3rdly, those which expedite the oxydation of injurious matters by giving up part of their oxygen,

and those which, by virtue of their great porousness, and other peculiar physical properties, are capable of absorbing immense quantities of gaseous bodies, and of expediting their oxydation and conversion into harmless compounds.

146.—1st. *On Deodorizing Agents, which destroy putrid gases mixed with sewage by decomposing and fixing them in an involatile form, and which by precipitating, and subsequently decomposing and fixing solid organic molecules, thereby prohibit their conversion into dangerous gases.*—Most of the metallic oxides, and their salts, as the "chloride and sulphate of zinc, acetate and nitrate of lead, sulphate, muriate and pyrolignate of iron, impure muriate of manganese, the refuse of bleaching works, common alum, the fixed alkalies, and the salts of lime and magnesia," combine "with the sulphuretted hydrogen and ammonia, and so far remove the unpleasant smells" arising therefrom. "But they do not touch the organic vapours" already diffused through the atmosphere." Generally speaking, "they are difficult to apply, and are very costly," two strong objections to their extended application. Lime and the superphosphate of lime can be used with most advantage. They coagulate part of the soluble matter of sewage, and favour the precipitation of the insoluble matter. Dr. Letheby found, by experiment, that, "in addition to the whole of the insoluble part of the sewage, the lime throws down about one-fourth of the soluble organic matter, leaving about eleven grains of it still in solution, in every gallon of day sewage, and about half

that quantity in the sewage which is discharged by night."[1]

147.—2nd. *On Deodorizing Agents, which attack and decompose the gases floating in sewer air, and convert them into innocuous chemical compounds.*—Chlorine, chloride of lime, hypochlorous acid, sulphurous acid and nitrous acid operate, chemically, upon the putrid gases issuing from decomposing sewage, and convert them into innoxious compounds. It is supposed that the oxychlorine compounds combine with the hydrogen of the noxious gases, "setting oxygen free to destroy the miasms." "Eight grains of chloride of lime, or less than an ounce of a solution of chlorine, will completely deodorize a gallon of sewage, and the diffusion of a little chlorine through the worst kind of sewer gases is sufficient instantly to deprive them of their offensive odour."[2] The sulphurous and nitrous acids, like the chlorine compounds, decompose the hydrosulphur and ammoniacal emanations, and fix them in a harmless form. All the members of this class are excellent deodorizers. But the great drawbacks to their extended employment are: 1st, their costliness; 2ndly, the difficulty of proportioning the quantity of any one of them, necessary for deodorizing large quantities of sewage, with such nicety and exactness as to prevent either a deficiency or excess being used. If too little be employed, complete deodorization will not be accomplished; if too much, the air will be tainted with

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[1] *Report on the Sewers of London*, 1858. [2] *Loc. cit.*

these agents themselves, all of which, being powerful irritants, act injuriously upon the pulmonary mucous membrane.

148.—3rd. *On those Deodorizing Agents, which expedite the oxydation of injurious matters by giving up part of their own oxygen, and on those, which, by virtue of their great porousness, and other peculiar physical properties, are capable of absorbing immense quantities of gaseous bodies, and of expediting their oxydation and conversion into harmless compounds.*— The manganates and permanganate of potash, fire, water, sand, clay and charcoal are all powerful destroyers of bad smells. The two first supply oxygen to neutralize sewage compounds, whilst the four last only absorb the gases, and favour their oxydation by eramacausis or slow combustion. The permanganate of potash has been patented by Mr. Condy of Battersea. Dr. Letheby states, that 150 drops of a solution, containing only 6 per cent. of permanganate (costing 1*s.* per gallon) "were sufficient to deodorize a gallon of ordinary sewage, but the disadvantage of it is, that it has no power to destroy the foul gases which have already escaped into the sewer air."[1] Even if it were used in the proportion of 150 grains to the gallon, it would cost 3,000,000*l.* per annum to deodorize the sewage of London with it. It is, therefore, a very expensive article. But, from a chemical point of view, "it must be admitted," says Dr. Letheby, "that Mr.

[1] *Loc. cit.*

Condy's solution is a powerful and valuable disinfectant, for, like chlorine, its action is permanent and complete, and in the solid form it is about equal in deodorizing power to the same weight of chloride of lime."

149. Fire, water, sand and clay have been known, from the remotest ages, as excellent deodorizers. The impossibility of the economical application of the first is, I fear, an insurmountable obstacle to its general adoption. And the proper application of the second presupposes the existence of an impervious and perfect system of sewage tubes, an unfailing and abundant water supply for flushing purposes, and an outlet into a river or into the sea, in which the sewage would be so thoroughly and rapidly oxydized, and rendered inert, as to avoid the contingency of foul emanations being thrown back upon the population, as is now the case with those gigantic sewage recipients, at London and Liverpool, the Thames and Mersey. This, at best, is a very unnatural way of disposing of sewage. For, its admixture and dilution with large volumes of water, in most situations, render its subsequent utilization, as a fertilizer of the soil, an utter impossibility. Sand and clay, or the soil, are capital deodorizers. Four thousand acres of land are sufficient to deodorize and utilize the sewage of Milan, the capital of Lombardy. The sewage of this ancient city is emptied into a small river, and the waters of this are expended in irrigating the neighbouring fields. So rich does the soil, so treated, become, that the Milanese farmers pare off a few inches of the upper layer, and cart it off to manure those fields which cannot be

subjected to irrigation. *The Times* correspondent, and Baron Von Liebig, inform us that the Chinese citizens sell their ordure to agriculturists; and there cannot be a doubt about the fact, that, in that populous country, it has constituted a valuable article of commerce for thousands of years. But for the deodorizing powers of the soil, the rustic depositions, in this country, would soon become intolerable, and though the rural cloacæ are sometimes exceedingly offensive, yet the oxydizing powers of the soil and atmosphere combined tend very considerably to limit the range of the noxious effluvia emanating from such places of resort.

150. But, of all deodorizers, none is so powerful and economical, none so innocuous in itself, and so easy of application, as common charcoal. It appears that, partly owing to the porousness of this substance, and partly to its inherent physical properties, it is capable of absorbing, with marvellous rapidity, prodigious quantities of gaseous bodies, and of facilitating their oxydation, by which injurious ones are converted into fixed and inodorous compounds, and are thereby rendered inoperative for mischief. The absorbent powers of charcoal were experimentally demonstrated by Saussure in 1814. This celebrated chemist discovered that a single volume of boxwood charcoal absorbed 90 volumes of ammonia; 85 of hydrochloric acid; 65 of sulphurous acid; 55 of sulphuretted hydrogen; 40 of nitrous oxide; 35 carbonic acid; 35 of bicarburetted hydrogen; 94 of carbonic oxide; 92 of oxygen; 75 of nitrogen; 5 of carburetted hydrogen; and 17 of hydrogen.

151. Dr. Stenhouse[1] found that "half a gramme (5 decigrammes) of the following kinds of charcoal absorbed the undermentioned number of centigrammes of different gases:—

—	Ammonia.	Hydrochloric Acid.	Sulphuretted Hydrogen.	Carbonic Acid.	Oxygen.	Sulphurous Acid.
Wood	98·5	45·0	30·0	14·0	0·8	32·5
Peat	96·0	65·0	28·5	10·0	0·6	27·5
Animal	43·5	...	9·0	5·0	0·5	17·5

"It thus appears that wood charcoal possesses rather the highest absorbent power for ammonia, sulphuretted hydrogen, and sulphurous acid; while animal charcoal is decidedly inferior to both wood and peat charcoal as an absorber of gases, but as a deodorizer it is, of course, very greatly superior."[2]

152. Dr. Stenhouse and Mr. Turnbull, of Glasgow, covered dead animals, to a depth of several inches, on every side, with charcoal, and allowed them to remain there for several months. On removing the animals, it was found that decay had made rapid progress. Still, during the whole period, no offensive effluvia issued from them. Thus, it was established that, so far from charcoal acting as an antiseptic, it rather expedited than retarded the chemical-disintegration of the tissues after

[1] *On the Economical Application of Charcoal to Sanitary Purposes.* By John Stenhouse, LL.D., F.R.S., 1855. *Pamphlet.*

[2] *Lancet*, April 28th, 1855.

death. Mr. Turnbull detected, in the charcoal, which had been used to encase two dead dogs, for a period of six months, "appreciable quantities of nitric and sulphuric acids and phosphate of lime, and but little ammonia, and scarcely a trace of sulphuretted hydrogen."[1] The inference is that the ammoniacal, sulphuretted, and phosphoretted hydrogen compounds, resulting from the decomposition of the tissues, were absorbed (as rapidly as they were produced) by the charcoal, and converted by speedy oxydation into inodorous and innocuous acids, the nitric, sulphuric, and phosphoric, which were retained, and fixed in the porous structure of the charcoal.

153. Air, charged with ammonia, sulphuretted hydrogen and sulphide of ammonium, was passed through a vessel, containing charcoal, by Dr. Stenhouse. It was instantly deprived of these noxious compounds, so that it could be respired with impunity. Dr. Letheby states, in his *Report on the Sewers of London*, that he had repeated some of Dr. Stenhouse's experiments, during a period extending over twelve months, and that he had ascertained that the offensive gases, arising from a closed cesspool, were completely deodorized by passing them through a small box, containing about thirty-six cubic inches of coarsely powdered peat charcoal. This was continued in action for three months, and although the charcoal was never renewed, yet it showed no derangement or loss of power. This eminent chemist

[1] *Loc. cit.*

concludes his observations on this marvellous power of charcoal in the following words:—"Now in making a practical application of these facts, it is manifest that we have in common wood charcoal a powerful means of destroying the foul gases of sewers. How it is to be applied is a question of but little embarrassment. Ventilate the sewers as you will, either by open gratings in the streets, or by the rain-water pipes of the houses, or by the pillars of the gas-lamps, or by tubes carried up at the landlord's expense from the drains of every house, or by special shafts in the public streets, in fact, let the gases go out of the sewers how they will and where they will, you have but to place a small box containing a few pennyworths of charcoal in the course of the draught, and the purification of the air will be complete. As far as we know, the strength and endurance of this power is almost unlimited; so that when once the air filter has been set up, it will last continuously for years."

"The sanitary applications of which charcoal is susceptible are many and important. The following is an enumeration of the principal:—To the construction of respirators, both to warm air and to disinfect it, as well as to purify the breath; to ventilation, to purify the air; to prevent the escape of effluvia from graveyards, and from dead and decomposing animal and vegetable matter, wherever and under whatever circumstances they may be met with. Thus, it may be used with good effect in coffins, in the wards of hospitals, in dead houses, in dissecting rooms, in malarious districts, and lastly, on the field of battle, where the work of dis-

infection is now left to the dog and the vulture, by which the process is far less efficiently performed."[1] Since Stenhouse's experiments and researches were brought prominently to notice in this country by Dr. Payne, now of the General Hospital, Calcutta, I believe that wood charcoal has been freely and successfully used as a deodorizer in Indian jail hospitals. But there is no reason to suppose that it is, even at the present time, extensively used to deodorize privies, sinks, filthy drains, and those lethal cesspools so often alluded to.

154. Whether charcoal possesses the power of disinfecting an atmosphere impregnated with the seeds of an infectious or epidemic disease, as well as of destroying unpleasant and unhealthy odours, seems to be a disputed question. Dr. Sutherland believes that it possesses no such inherent property, in the legitimate sense and meaning of the word, and he considers that it would be better to disuse the term disinfectant, because it leads to undue expectations, and to the neglect of other precautionary measures. He holds the opinion that "merely removing the odour or bad smell of localities does not remove the more refined electric or chemical influences at work in producing diseases, more especially those, like cholera or ague, having their origin in epidemic and meteorological phenomena." Still, it is probable that, since this porous substance can absorb and hasten the oxydation of amazing quantities of deleterious gases, so as to make them inert, it also possesses

[1] *Lancet, loc. cit.*

the power of attracting, retaining, and fixing, or destroying those subtle poisonous germs of epidemic and contagious diseases, which generate in, and are propagated from, the sink, the sewer, the midden, or cesspool. At all events, if so much as this is not to be admitted, one thing is as manifest as noonday, viz., that the complete deodorization of sewage and other injurious emanations must deprive these poisons of the *nidus*, whereupon to germinate and multiply, and wherefrom to become disseminated in great profusion,—too frequently to wage a desolating war against the lives of mankind.

155. I will now cite a practical example showing the extraordinary power, which perfectly dry and coarsely powdered wood charcoal has in deodorizing the smells arising from sloughing and gangrenous sores, and necessaries. The Meywar Bheel Corps Hospital is seldom free from cases of bad ulcers, which frequently assume the worst forms of gangrenous action, sparing neither muscle, nerve, vessel, tendon, nor bone in its destructive progress. There are now, in hospital, eight cases of spreading gangrene, occurring in men who were sent out at the beginning of the month (August) to repair the public roads, near the village of Some—a most jungly and malarious locality. Over each patient's bed a small bag, filled with charcoal, is suspended. Over the outside of the inner dressings, and underneath the fixing bandage, a small quantity of the powdered article is sprinkled every time the sores are cleaned and fresh dressing applied. And during the dressing of the

sores, a small box, freely perforated on all sides, and containing broken up charcoal, is held by an assistant over the exposed sores, to intercept the effluvia issuing therefrom.' So successful is this plan in dissipating every disagreeable odour, that on entering the hospital, the difference between the sweetness of the internal and external atmospheres is scarcely discernible. Bags of charcoal are also suspended from the walls of the necessary; and the Bheels, Mogiahs and Hindustanees of the regiment assure me, with the best effects, in destroying bad smells. The only precaution, which is necessary, is to see that the charcoal is kept perfectly dry, for when it is allowed to become moistened, its absorbent capabilities become considerably diminished. This is just what might have been expected from the experiments of Hoffman and Blyth, who found that charcoal lost its power of effecting deodorization, after three times its own bulk of liquid sewage had been made to percolate through it. And Dr. Sutherland found, that it was of little use in destroying the stench, in the trenches before Sebastopol, when it had become moistened by the rain. Exposure to an Indian sun is quite sufficient to expel the moisture absorbed from the air. But if, after long use, in the more humid climates of this country, or in the monsoon months in otherwise dry climates, this simple measure failed, re-ignition, for a few minutes, in a closed space or vessel, will always suffice to restore its original vigour. By observing these precautions, there is no reason to doubt that the same material will last for an unlimited

period of time. That which is now in use, in my hospital, has been at work upwards of two years. Beyond occasional exposure to the midday sun, nothing whatever has been done to it, and it appears to be quite as vigorous now as it was when first applied.

CHAPTER IX.

ON THE EFFECTS OF LABOUR ON THE HEALTH OF PRISONERS.

156. Holy Writ testifies that man, even whilst endowed with all the attributes of physical and spiritual immortality, was not exempted from the exercitation of his muscles, sinews, and bones. For, no sooner had the Almighty "breathed into his nostrils the breath of life," than He "planted a garden eastward of Eden, and there He put the man whom he had formed—to dress it and to keep it." After our first parents had disobeyed the commands of the Divine Will, disease, death, and physical toil constituted part of the punishment inflicted for the commission of the First Sin. But, notwithstanding that "in the sweat of thy face shalt thou eat bread,"—in other words, that corporeal labour was included in the punitive sentence, which ensued upon man's self-imposed degradation,—there is no evidence to show that such taxation of the animal structures was ever designed to curtail the period of his existence, viz., "three-score years and ten," as defined by the Psalmist. If the average duration of life, at the present day, does

not reach one-half the number of years laid down by David, it is not to natural, but to unnatural modes of labour, combined with a host of inimical conditions, arising out of our artificial systems of living, working, &c., that such a lamentable state of affairs is to be attributed.

157. Physiologists declare that a certain amount of active employment, or bodily labour, is absolutely necessary for the preservation of the tone and elasticity of the human organism; and psychologists teach us that the cultivation of the mind, within proper limitations, is conducive to a vigorous status of the nervous system. What pure air is to the respiratory operations, wholesome water to the chemical and vital operations within, and a normally constituted diet to the maintenance of the animal heat and nutrition of the body, the diurnal cycle of corporeal and intellectual occupation, alternated with repose, is to the entire framework as a unit made up of many different, harmonizing, and beautifully constructed parts. With good air, water, and food, for consumption, labour, unless excessive, and provided it is characterized by variety, by the inculcation and development of industrial habits, and "by association with some purpose or object," can never be antagonistic to good health and long life. On the contrary, all experience goes to prove, that it is as highly preservative of health as it is prophylactic of disease. It is only when corporeal labour is disproportioned to the capability of the individual, when in fact the muscular or nervous system, or both, are over-taxed, that it can be

acknowledged as a cause of predisposing to disease, and of shortening life.

158. I have already endeavoured to prove, by an appeal to authentic data, the general accuracy of which is unquestionable, that the air the criminal breathes, the water he drinks, and the food he consumes, are all so unwholesome as to render ill-health and high mortality rates sure consequences of imprisonment in by far the largest majority of Indian jails. Of course, there may be some accidental exceptions, but sufficient testimony remains to show that these do not interfere with the validity of the general rule, deduced from a careful digest of the effects of incarceration upon the health and lives of the criminals, during long periods, in the aggregate of all the prisons of the Indian empire. With such defective sanitary arrangements as have been delineated, in previous articles, it is not very surprising, then, to find that the labouring prisoners, who ought, under improved sanitation, to enjoy the best health,—that is to say, who ought to suffer least from disease, and to succumb in the smallest proportion,—are actually the very individuals who sicken most seriously, and die off with the most appalling rapidity.

159. The correctness of this observation is well illustrated, in the subjoined tabular statement, compiled from Dr. Mouat's Reports, for the years 1855-56 and 1856-57 :—

Classes.	Average Strength.	Deaths.	Ratio per 1,000 of Deaths to Strength.
Labourers.....	26,414·02	2,875	108·840
Non-labourers	6,834·14	542	79·300
Inefficient from age and other infirmities	5,789·63	435	75·130
Total	39,037·79	3,852	98·673

Thus, out of every 1,000 souls, 29·54 more deaths occurred every year among labouring than non-labouring prisoners. The latter are chiefly composed of civil debtors and prisoners awaiting trial. Civil prisoners are more free from the depressing passions, and are, perhaps, in an underhand way, better fed than the labouring class. Besides, they are rarely fettered. Persons awaiting trial are not subjected to any punitive treatment, beyond what is inflicted by the restraint deemed necessary for their secure confinement, until their cases are decided by the judicial authorities. These circumstances enable us to comprehend, in part, the reason why the non-labouring do not die so frequently as the labouring class. It is curious to find that the "inefficient from age and other infirmities," whose constitutions have been shattered to their very foundations by dissipation, intemperance, opium-eating, ganjah-smoking, and a reckless hand-to-mouth life, have not died in such large numbers in proportion to strength as the picked and comparatively robust young men,

selected for labour, by 33·71 per 1,000. During the two years, over which the above table extends, 108·84 out of every 1,000 labouring prisoners, succumbed annually. Now, when we consider the long periods for which prisoners are often "sentenced by the Indian Courts, it needs but little calculation to show how frequently a sentence of hard labour" is equivalent to a capital punishment. If the whole 26,414 individuals had been sentenced to a little more than nine years' imprisonment, with hard labour, the punishment would have equalled a capital execution of the whole number. But, as it never has been the object of the Government nor of the law to convert *minor* into *capital* punishments; and as such a process of conversion does really exist, at the present time, in the jails of Lower Bengal, and in many other parts of India, it may be well to draw particular attention here to the chief causes, which combine to render what ought to be a means of increasing health and of prolonging life, one of the surest sources of ill health and death to the criminals.

160. Foremost among the causes of the great mortality among the labouring prisoners, are the defective dietaries that have been, and are now, used in our jails. With a view to place beyond doubt the injurious effects which the Bengal prison dietaries must have exercised, and are now exercising, upon the constitutions of this large class of criminals, I have prepared the following brief statement from those given in paras. 74 and 86, showing, at a glance, the computed nutritive value of

the old Bengal dietary, the new Bengal dietary, and the proposed Bengal dietaries :—

For Labouring Prisoners.

Dietaries.	Carboniferous Nutriment in ozs.	Nitrogenous Nutriment in ozs.	Total real Nutriment in ozs.
Old Bengal Dietary.....	25·876	4·5740	30·4500
New Bengal Dietary	23·429	1·7568	25·1858
Proposed Bengal Dietaries	17·340	5·7348	23·0748

If the proposed dietaries, the rough materials entering into the composition of which are given in para. 83, be near approximations to correct scales, it follows that the two other scales, noted in the above statement, *must* be defectively constituted in two important particulars. The old Bengal dietary contains an *excess* of 8·536 ozs. of carboniferous, and a *deficiency* of 1·1608 ozs. of nitrogenous nutriment ; whilst the new one contains 6·089 ozs. *too much* of the former, and 3·978 ozs. *too little* of the latter principle.

161 Now, it was found, in an experimental inquiry instituted by the General Board of Directors of Scotch Prisons, and conducted by Professor Christison of Edinburgh "on a scale, and with a care unequalled by any investigation of the kind hitherto made public," with a view "to discover the exact quantity of nourishment that was sufficient and not more than sufficient to maintain the *health* and condition of the prisoners in the jails" in Scotland, that "four ounces of real albuminous nutriment were found to be barely sufficient to

support a man *not* subjected to hard labour, and confined only for a period of from ten days to two months. . . The observations were made on 896 males, and 726 females in the prisons of Edinburgh, Glasgow, Aberdeen, Stirling, Paisley, Ayr and Perth. Each prisoner was weighed on admission, and his state of health and strength noted. This was repeated every fortnight; 8,000 observations of this kind were made; the prisoners were kept steadily on one dietary, the articles of which were oatmeal, butter milk, or skimmed milk, bread, meat, barley, peas and vegetables." The conclusions drawn from this great experiment were "that, for prisoners having no great exercise, food containing 4 ozs. of nitrogenous, *i. e.*, albuminous principle, with enough of carboniferous nutriment, is sufficient for the support of health, weight and general condition; but less than this is not sufficient, and that this quantity is not adequate for those accustomed to vigorous occupation in the open air; that it is inadequate also for persons exceeding the average bulk, and for growing lads between seventeen and twenty."[1]

162. If then 4 ozs. of nitrogenous nutriment be absolutely necessary to maintain health, weight and general condition in those *not* sentenced to hard labour, it stands to reason that there is too little of this essential principle in the old and new Bengal dietaries for labouring prisoners. The former contains only ·574 of an ounce more, the latter actually 2·2432 ozs. less nitro-

[1] *Vide* Dr. Davidson's *Report on the Trichinopoly Jail* for 1856.

genous nutriment than Dr. Christison has proved to be necessary for the support of a prisoner not subjected to labour, and who was confined for the limited period of from ten days to two months, and to make bad worse, they are both characterized by the presence of a superfluous and dangerous excess of carboniferous nutriment. It is clear that a dietetic allowance, which does not afford an adequate quantity of reparative material, even for those, who are not expected to undergo active exertion, when given to those who are sentenced to hard labour, must operate very prejudicially upon such persons. As the waste of the animal structures, beyond what is normally the result of mere functional action in repose or passive exercise, is in the direct ratio of the amount of physical labour exacted, it follows, inferentially, that the reparative food must be increased in similar proportion to renew the loss of organized tissues. If the equilibrium is not maintained between the demand for the material for structural repair, and the supply—and particularly if the latter is deficient in quantity, gradual—insidious starvation must be the inevitable result. The fact is that, with such a scale of food as is represented by the new Bengal Dietary, the wonder is not so much that the mortality among labouring prisoners has always, since its introduction, been extraordinarily high, as that it has not been still higher. And it will, to my mind, be an astonishing circumstance, other things being as they are, if it is ever reduced so long as this scale, or a near approximation to it, is permitted to be used in the jails of Lower Bengal.

163. But the proposed scales are, I hope, free from these objections. While they do not allow more than enough of the carboniferous, they afford no more than a sufficiency of the nitrogenous principle. I am strongly impressed with the idea that an experimental inquiry, conducted according to the plan adopted by the celebrated Dr. Christison, under the auspices of the General Board of Directors of Scotch Prisons, in any of our large well-managed prisons, would corroborate the views here inculcated by obtaining two great results—a diminished ratio of sickness, and a decreased rate of mortality among prisoners sentenced to hard labour,—results which, I am convinced, the Indian Government would be desirous of accomplishing.

164. There is a notion to the effect, that so much carboniferous food is not required in this, as in colder countries. But it is probable that the importance of this theory has been over-estimated. The civil population are not dieted in consonance with it. If we consider the scores of millions of people, in this country, who daily consume rice and ghee, or oil,—the first being almost completely, the two last entirely composed of respiratory food,—and who, in addition, consume cereal grains also rich in this description of food, we will find that really as much of this principle,—if not more,—is disposed of by the native communities, as by the inhabitants of temperate climates. But, by a beautiful provision of nature, the excess of heat, thus generated, is rapidly carried out of the system through the medium of the perspiration, by which means the

organs within the body are protected from an accumulation of caloric that would otherwise soon become incompatible with health. As regards the theory, viz., that nitrogenous food is not required in such large quantities, by the labouring population of hot, as by the same class in cold climates, it is not at all improbable, that experimental investigation would prove that it is untenable,—at all events that it has been too much respected by the framers of Indian prison dietaries. For, in an exhausting climate, like that of India, a definite proportion of building-up material, to renew structural waste, is just as indispensably necessary, as in cold or temperate countries. "The consumption of mechanical force in the body is always equal to a waste of matter in the body, and this must be restored in the food. When a man or an animal works, a certain amount of food must be added; increased work and effort, without a corresponding increase of food, cannot be continued for any length of time; the health of the man or animal soon gives way."[1]

165. Many of the other removeable causes which combine to keep up the general average of mortality, such as bad air arising from defective sanitary arrangements, impure water, overcrowding and imperfect ventilation, &c., must operate more deleteriously upon the ill-fed labouring than upon the non-labouring prisoners.

166. It is usually understood, that of all descriptions

[1] Liebig's *Letters on Chemistry*, p. 322.

of labour, that can be adopted, by the industrial population of any country, *cæteris paribus*, none is so salubrious as active occupation in the open air. The good health and long life, enjoyed by the rural peoples, throughout the world, is chiefly owing to the fact, that the scene of their labours is laid in space limited to view only by the canopy of the heavens on the one hand, and by the distant horizon on the other, and furnished, in rich profusion, with all the choicest beauties of animated nature. The comparatively inferior health and short lives of the peoples, inhabiting large towns and cities, are, in great part, attributable to the confined spaces in which they move and dwell, and to in-door occupation. This law applies, with full force, to the town and rural peoples of India. But, strange to say, the universal law is positively reversed, when we come to criticize the vital statistics of the out- and in- door labouring prisoners in this country, as may be seen by a reference to the following *Statement exhibiting the influence of out- and in- door labour on the mortality among the Prisoners, in Lower Bengal, for two years:—*

Classes.	Average Strength.	Deaths.	Ratio per 1,000 of Deaths to Strength.
Working on the Roads...	6,817·10	1,086	159·30
Engaged in Manufactures	12,400·64	1,200	96·76
Otherwise employed	7,196·28	589	81·84
Total	26,414·02	2,875	108·84

Thus, in every 1,000 able-bodied prisoners, sent to work on the roads, no less than 159·30 died, annually. This is a frightful rate of mortality. It is, in truth, equivalent to a sentence of capital punishment upon the entire class,—a class, too, be it recollected, not convicted of *heinous* but of *minor* transgressions of the law, in about every six years and four months. When the general average is so remarkably high, the extremes must be terribly appalling. Indeed, in some gangs, notwithstanding the benevolent bestowal of subordinate medical agency, which has been usually supplied to each gang numbering fifty prisoners, for many years past, the lives of the individuals composing them could not have been worth eighteen months' or two years' purchase, at the outside.

167. The mortality among the prisoners working on the roads was 62·54 per 1,000 in excess of that which held good among those engaged in manufactures, within the precincts of the jails; and 77·46 per 1,000 higher than that which obtained among the "otherwise employed," or those who have been chiefly told off, to perform the menial duties of the prisons. Thus, if the labour on the public roads were abolished, and in-door labour substituted for it, and provided all other circumstances remained the same as heretofore, the saving of the lives of those who have been convicted of trivial offences against the laws of the land would be, out of 3,408 souls, 213, annually; and, if their occupation, at in-door labour, could be so improved as to make the mortality descend to that which prevails among those

engaged in the execution of menial duties, the saving of lives would be 264, annually.

168. A similar reversal of the natural law above-mentioned, has always existed, among the out-door labouring prisoners, in India. I believe that the exceptions have been so few as to have been rather confirmatory than otherwise of the general rule. Hutchinson drew marked attention to the subject so far back as 1835. And the Prison Committee, in their Report delivered on the 8th January, 1838, confirm his observations. They remarked, in the 112th and 113th paras. of their report, that, "if fair allowance be made for deaths occurring after a return to jail, in consequence of diseases caught on the roads, it will be evident that the chance of death is so much increased by sending a batch of Bengal convicts to a road-gang that, when the term of imprisonment is long, what was intended for a secondary punishment by the judge is, in respect to many of the prisoners so sent, converted into a capital punishment. But a fair judgment cannot be formed on this point from the mere average result. Inequality and uncertainty, (which are worse elements in any punishment, even than unnecessary severity,) being apparent in an extreme degree upon the face of our returns, it is necessary to examine the extreme cases. In one gang employed under Captain Thomson, in the Ramghur Division of the Trunk Road, the number of convicts who died whilst actually belonging to the gang, averaged for ten months, at the rate of 34 and 4-10ths of deaths per cent. per annum.

In one month, the deaths in that gang were 10 per cent."

169. Since that period (1838), however, much improvement has taken place,—not in the actual condition of road-gangs themselves,—but in the great diminution of the numbers of prisoners exposed to out-door labour. This result has been brought about by the unceasing exertions of the prison inspectors, in the face of considerable opposition on the part of the local magisterial authorities. But the number of convicts so employed is still great in Bengal, Madras, Bombay, and the North-West Provinces. The average daily total of prisoners engaged upon the roads, in Bengal, during 1855–56, was 3,367·83, out of which 586 died, or 174 per 1,000; and during 1856–57 it was 3,449·27, out of which 500 died, or 144·96 per 1,000. Owing to some errors in the returns, the comparative mortality rate between out- and in- door labourers could not be accurately calculated for 1857–58; but we find Dr. Mouat reiterating the annual complaint, that "a daily average of 2,599 labouring convicts were occupied on the roads,"—an occupation which has been proved, from long experience, to be as destructive of discipline as of health and life. In the year 1857–58, no fewer than 4,647 persons were "sentenced to hard labour and employed on the roads and public works," whilst only 950 were sentenced to labour at "manufactures and domestic work within the jail," in 18 Madras jails. In table G (*vide* Report of the Prison Inspector, for 1857–58), the Inspector-General gives the almost unintelligible

number of 1,038,521, as the "number of convicts" employed "in the repair of public roads," in a total of 37 jails. I believe that the general practice, in the Bombay Presidency, is to carry out the sentence of hard labour by enforcing out-door labour on the public works, roads, &c. In the North-West Provinces, the system is also very prevalent; but it is hoped that the institution of central prisons, at Agra, Bareilly, and Allahabad, and the encouragement of profitable in-door labour, as a means of improving penal discipline, in these and other prisons, in consonance with the recommendations of Mr. Woodcock and Mr. Thornhill, have tended very considerably to diminish the numbers so engaged. In the Punjab, "all out-door labour, except that in the garden, is strictly prohibited, and all prisoners are to be confined closely to the jail, an allowance in lieu of convict labour being drawn by every district officer."[1]

170. Hutchinson enumerated the causes of the extreme unhealthiness of out-door labour, in the case of the Indian prisons, as follows:—"He is taken out of the jail at sunrise or before it; he labours uninterruptedly all day, with the exception of an hour, perhaps, at noon (for I am not sure that this indulgence is in every case allowed), when he generally satisfies the cravings of hunger with a little parched gram (a species of pulse), or rice, or perhaps with these grains in a perfectly raw state. He then continues to labour on,

[1] *Vide* Hathaway's *Manual*, p. 86.

till 4 o'clock P.M., when he commences his return to jail; but this may be at some distance; so that, by the time he reaches it, and the whole of the prisoners are counted over, it is often near sunset. They have then their sole meal to prepare and eat, before they are locked up for the night. All this, it is to be recollected, is exacted from a class who are frequently the most prone to disease, from their previous habits of dissipation, who are suffering much mental anxiety and distress, who are scantily fed, who enjoy no reward for their labour, and who, in addition to everything else, are working heavily ironed. Many of these persons, too, be it remembered, are considerably advanced in years; and to a still greater number, the mode of labour to which they are forced, is totally new and unaccustomed. . . . In the rains, they are generally, if not always, taken out, unless it actually happens to rain at the time they would otherwise be leaving the jail; they frequently come home drenched with rain; and few of them, I should suppose, are very well prepared with a change of apparel." Taking all these things into account, together with a review of the work performed by the peasantry of the country, this philanthropist concluded that the out-door labourers were overworked, and that many of them were destroyed in consequence.

171. The prisoners in Bengal are now, and have been, with few exceptions, since 1843, supplied with two meals per diem; and one extra blanket is now served out, at the beginning of the cold season, in addi-

tion to the allowance of two thin suits per annum. The aged and infirm are not usually sent—at least not to such an extent as formerly—to work on the roads. But with these exceptions, all the causes of disease pointed out by Dr. Hutchinson are still in existence. That the out-door prisoners are overworked is not to be doubted, because they are under-fed. But, provided they were properly fed, the labour exacted would not be sufficient to comply with a sentence of hard labour.

172. It is, I think, not at all improbable that more muscular wear and tear are occasioned by out- than in-door labour; though the judge, in passing sentence, must always contemplate the sentence of hard labour according to a measurable and fixed standard. There is strong presumptive evidence of the inequality of the two kinds of labour, as enforced, in the differing ratios of mortality among out- and in- door labourers as exhibited in para. 166. How powerfully this observation is supported by what has already been advanced concerning the inadequacy of the dietaries, is manifest. For, if the present scale in Lower Bengal for labourers is not sufficient in nitrogenous food for even the non-labouring prisoners, it is demonstratively clear that its inefficiency would be, practically, most strikingly developed in those persons who are subjected to that kind of labour which entails the greatest waste of the animal tissues.

173. Defective clothing and hutting are also frequent causes of sickness and mortality among out-door labourers. In no country in the world, is protection by efficient clothing and good shelter, against the violent

extremes of temperature, so frequent in India, more absolutely indispensable than in this climate, and this arises chiefly from the abundant generation of malaria, the evil effects of which are always favoured by bad clothing and hutting. Add to these defects, non-water-proof tents (or huts), often pitched in ineligible situations, for the accommodation of those unfortunate creatures located at a distance from the jails; over-crowding in these; the absence of more than a mat to intercept the damp striking upwards from spongy soils; the absence of changes of dress, and more particularly of separate bedding, during the rainy season; the employment of prisoners in localities reeking with concentrated miasmal exhalations, during the unhealthiest periods of the year; the consumption of stagnant or marsh water; the presence of iron fetters; and then the reader will have some conception of the real reasons why that kind of labour, which ought, under a humane and reformatory system of prison management, to be the healthiest, has always proved more prejudicial than any other to the health and lives of the Indian convicts.

APPENDIX.

TABULAR STATEMENT, *exhibiting the Effects of Out- and In- door Labour on the Mortality among Prisoners in the Chittagong and Rajshahye Jails, compiled from the late Dr. Bedford's Paper, published in 2nd No. of the Indian Annals of Medical Science.* (1854.)

CLASSES.	Places of Observation.	Periods of Observation.	Average Strength.	Admissions.	Deaths.	Ratio per 1,000 of Admissions to Strength.	Ratio per 1,000 of Deaths to Strength.
Out-door Labourers	Chittagong	From August, 1848, to June, 1849, both months inclusive.	157	232	20	1,477·7	127·30
In-door Labourers .			142	73	9	521·1	62·60
Non-Labourers.....			125	45	8	360·0	64·00
Out-door Labourers	Rajshahye	From March to December, 1851, both months inclusive.	258	184	7	713·1	27·10
In-door Labourers .			295	222	7	752·5	23·70
Non-Labourers.....			74	21	2	283·7	27·00
Out-door Labourers	Rajshahye	The year 1852.	243	310	9	1,275·7	37·00
In-door Labourers .			280	195	17	696·4	60·70
Non-Labourers.....			71	19	1	267·6	14·08

Thus Dr. Bedford's statistics of the Chittagong Jail show that out-door labour was attended by nearly three times as many admissions and more than twice as much mortality to strength as in-door labour; and that the non-labourers suffered from fully four times as little sickness and twice as little mortality as those who are subjected to out-door labour; those of the Rajshahye Jail, during ten months, from March to December, 1851, show that the sickness was slightly higher among

in- than out- door labourers; but that the mortality was highest among the latter; and that there was by far the smallest amount of sickness among the non-labourers; and those of the same jail, during 1852, show that the sickness was much greater among the out- than the in- door labourers, and much less in the non-labourers than in either. Twelve of the seventeen deaths credited to the account of the in-door labourers occurred in March, one of the healthiest months of the year. These must have occurred from some epidemic —probably cholera. If so, and excluding these twelve deaths, the mortality per 1,000 of strength will stand at 37 in out-door labourers, 17·8 in in-door labourers, 14·08 in non-labourers. But though there is a want of uniformity in these results, doubtless occasioned by disturbing conditions of which we are uninformed, they are sufficient when thrown together, and considered in a collective form, to warrant the justice of the following deductions, namely, that the sickness and mortality are very much greater among out than in-door labourers; and that they are both higher in in-door labourers than in the non-labourers.

CHAPTER X.

ON THE ABOLITION OF TOBACCO.

174. One of the fruits resulting from the appointment of inspectorial officers, vested with almost directorial powers, to watch over, and to control the general management of Indian prisons, has been the very extensive abolition of pernicious narcotics, formerly allowed to the prisoners, under the erroneous impression that their use, in some shape or other, was essentially necessary for the preservation of health. In the Punjab, Lower Provinces of Bengal, and Madras, it has been wisely ruled that tobacco and opium can only be granted to the convicts at the express direction of the Medical Officer, and *then* only in curtailed quantities, and for limited periods, in cases where the general health appears to suffer from their sudden and complete withdrawal from persons who have been long accustomed to consume them. From Mr. Woodcock's dietaries appointed to be used in the Prisons of the North-West Provinces, with transcripts of which I have been obligingly provided through the courtesy of Mr. J. D. Sandford, Officiating Assistant Secretary to the Government of the North-West Provinces, it appeared that,

during 1851, out of thirty-three jails, tobacco was allowed to the prisoners in twenty-seven. Thus in one jail, the daily quantity amounted to sixty grains; in eighteen, to sixty-three and a half grains; in two, to ninety grains; in two, to one hundred and twenty-seven and a half grains; and in the remaining four, to a hundred and eighty grains. I am not certain whether the weed is even now altogether abolished in the North-West Provinces, and in the Bombay Presidency.

175. There can be no doubt about the wisdom, which, in the face of much passive and active opposition, dictated the absolute interdiction of practices, the recognition of which interfered with the deterring influence of imprisonment upon the criminals, and permitted the indulgence of habits anything but conducive to health. As there appears to be sufficient warrant for the entertainment of the belief that the use of tobacco is not so entirely abolished as might be supposed, from a perusal of the circular orders on the subject, arising from the accommodating and fraternizing characters composing many of the subordinate prison establishments, from the lax supervision exercised by native gaolers, or from the possible non-prohibition of the narcotic in some quarters of the empire, I propose to adduce incontrovertible testimony to show that tobacco is one of the most poisonous substances belonging to the vegetable kingdom; that what are denominated its moderate and immoderate use, whether by smoking, chewing, or snuffing, must be, mentally and physically, injurious; that all the ingenious theories, which have been advanced

to prove its antiseptic and protective or preventive powers, are untenable; and, that the fears which have been entertained regarding the dangers supposed to follow its absolute and immediate withdrawal from persons, who may have been accustomed to its use, from childhood, or youth till the middle, or later periods of life, are, in an overwhelming majority of cases, physiologically destitute of the slightest foundation in fact.

176.—1st. *Poisonous properties of Tobacco, &c.*—The greatest living toxicologist of the age, Dr. Alfred Taylor, remarks that "the symptoms of poisoning by tobacco are nausea, vomiting, vertigo, delirium, loss of power in the limbs, general relaxation of the muscular system, trembling, complete prostration of strength, coldness of surface with clammy perspiration, convulsions, paralysis, and death. In some cases there is diarrhœa, with violent pain in the abdomen; in others there is rather a sense of sinking and depression in the cardiac region, passing into syncope, or creating a sense of impending dissolution. With the above mentioned symptoms there is dimness of sight, with confusion of ideas, a small, weak, and scarcely perceptible pulse, and difficult respiration." With regard to the dose sufficient to destroy life, this authority states, in continuation, that "Dr. M. Gregor has seen some of the most severe symptoms follow the administration of an enema which contained only half a drachm of tobacco in the form of decoction."[1] Dr.

[1] *Lancet*, Aug. 30, 1845, p. 240.

Paris witnessed a case, which proved rapidly fatal, where a decoction of tobacco had been used as an enema in the attempted reduction of strangulated hernia.[1] And several cases of a similar kind are recorded by other writers. Dr. Pereira considers that it would not be safe to use more than fifteen or twenty grains under these circumstances, and he quotes an instance from Dr. Copland in which death was caused by so small a dose as thirty grains.[2] The fatal effects of tobacco may follow very speedily on its administration. Death has been known to take place in so short a period as three-quarters of an hour; and a case which occurred to M. Tavignot is reported to have terminated fatally in eighteen minutes.[3]

177. It has been experimentally ascertained that the poisonous properties of tobacco are dependent upon the existence in it of a volatile yellow tinted and liquid alkaloid called *nicotina*, which, according to Dumas, constitutes less than 1–1000th part of tobacco. But, according to Pereira "1,000 parts Cuba tobacco give 8·64 of nicotine; of Virginia 10; and of smoking tobacco 3·86."[4] Sir William O'Shaughnessy states that the best tobacco yielded about 1 per 100 of this principle. This analysis corresponds with Pereira's estimate of the amount of nicotine found in Virginia tobacco. Nicotine possesses a pungent and irritating odour analogous to that of tobacco, and an acrid burn-

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[1] *Med. Journ.* ii. 418. [2] *Mat. Med.* ii. 1254.
[3] *Brit. and For. Med. Rev.* No. XXIV. 562, *loc. cit.*
[4] *Mat. Med.* ii. 1247.

ing taste. "It has an alkaline reaction and is soluble in water. It remains liquid down to 21°. At 212° it evolves white alkaline vapours, which have a powerful odour. It is not very inflammable, but it may be burnt like oil by means of wick."[1] "Nicotine is a virulent poison, a single drop being sufficient to kill a full-grown dog."[2] A concrete volatile oil called Nicotianin is obtained by distillation of tobacco leaves; and there is an empyreumatic oil which results from the decomposition of tobacco by distillation at a very high temperature.[3]

178.—2nd. *The moderate and immoderate use of tobacco, whether by smoking, chewing, or snuffing, mentally and physically injurious to health.*—If such small quantities of the rough article of commerce, or of its active principle, the volatile alkaloid nicotina, as above noticed, are capable of producing dangerous, or even fatal results, it follows that what is called the moderate, or immoderate use of tobacco, by any of the modes referred to in this heading, must be more or less prejudicial to the human economy; and although it is by no means easy to prove by the numerical method, the exact extent to which it abbreviates life, it must, nevertheless, be acknowledged that it possesses the power of doing so; because, when habitually employed, however moderately, it interferes with, and deranges, the normal equilibria of the nervous, circulatory, digestive, and assimilative functions. When chewed or snuffed, the

[1] Taylor. [2] O'Shaughnessy, *Beng. Dispensatory*, p. 473. [3] Taylor.

poison is carried directly in the stomach, and such of the active principle as may not have been absorbed into the circulatory fluid, through the mucous membranes of the mouth and nasal cavities, is rapidly taken up into the system by the absorbents of the stomach and small intestines. When smoked, the nicotine, in a state of vapour, is spread over the buccal and nasal mucous membranes, thus finding an easy entrance into the blood; and when the saliva, richly impregnated with the juice, is swallowed, it is absorbed in the manner above described, by the alimentary mucous membrane. If part of the poison is rejected in cases where the contaminated saliva is ejected, during the period of smoking, the practice is still injurious, for, though this is a mitigatory measure as regards the nicotine, it is deleterious, inasmuch as nature never intended such an important product as the salivary secretion, to be thus recklessly wasted. The whole of the secretion manufactured by the salivary glands is required to reduce the solid food to a pulp and to act chemically upon certain elements of the food, prior to its arrival at the stomach: hence the fact that it can neither be wantonly poisoned nor rejected without augmenting the difficulties which the stomach has to encounter during digestion.

179. Dr. William Prout states, at the conclusion of his *chapter on the Pathology of the Saccharine Assimilation and Secretion* (*vide* this Author on *Stomach and Renal Diseases*, fifth edition, 1848), that "there is an article much used in various ways, though not as an aliment, the deleterious effects of which, on the assimi-

lating organs, &c., require to be briefly noticed, viz., *tobacco*. Although confessedly one of the most virulent poisons in nature, yet such is the fascinating influence of this noxious weed, that mankind resort to it in every mode they can devise, to ensure its stupefying and pernicious agency. Tobacco disorders the assimilating functions in general, but particularly, as I believe, the assimilation of the saccharine principle. I have never, indeed, been able to trace the development of oxalic acid to the use of tobacco; but that some analogous and equally poisonous principle (probably of an acid nature) is generated in certain individuals by its abuse, is evident from their cachectic looks, and from the dark and often greenish yellow tint of their blood. The severe and peculiar dyspeptic symptoms sometimes produced by inveterate snuff-taking are well known; and I have more than once seen such cases terminate fatally in malignant disease of the stomach and liver. Great smokers, also, especially those who employ short pipes and cigars, are said to be liable to cancerous affections of the lips. But it happens with tobacco, as with deleterious articles of diet; the strong and healthy suffer comparatively little, while the weak and predisposed to disease fall victims to its poisonous operation. Surely, if the dictates of reason were allowed to prevail, an article, so injurious to health, and so offensive in all its forms and modes of employment, would speedily be banished from common use."

180. Ranald Martin says, "Of hookah smoking (among officers) I need say nothing, as happily its day

is nearly gone; but I have seen many cases of severe constitutional and cardiac disturbance from its abuse, with perfect recovery of health on the discontinuance of the habit; the digestive functions, those of the heart and nerves, having been seriously affected in the most inveterate of smokers. Of the miseries, mental and bodily, which I have witnessed in the persons of young officers, from the abuse of cigars, I will only say that they very far exceed those detailed in the *Confessions of an Opium-eater*. After quoting from Lallemand, to show "that the use of tobacco deadens the generative functions," this author remarks that "Professor Lizars, of Edinburgh, after enumerating the modes in which syphilitic ulcerations of the lips, mouth, and throat are propagated by the short pipe and cigar, and how carcinomatous ulceration of those parts is produced by the same cause, states that the constitutional effects of tobacco are numerous and varied, and occasionally truly deplorable. Amongst these he enumerates: dyspepsia, vitiated taste, a loose condition of the bowels, congestion of the brain, loss of memory, amaurosis, deafness, nervousness, palsy, emasculation, and cowardice, or want of moral courage."[1]

181. Dr. Seymour, a Commissioner of Lunacy, in a letter to Lord Shaftesbury, on Lunatic Asylums, condemns the use of tobacco in strong language. He says, "The effect of excessive smoking is to depress the circulation; the heart becomes weak and irregular in

[1] *Influence of Tropical Climates*, &c., pp. 410 and 411.

its action, and the pulse is scarcely to be felt. The patient becomes frightened, and loses all resolution; once a bold rider, he cannot mount his horse; a carriage passing him rapidly in the street alarms him; his appetite fails; his mind fills with horrors, imaginary crimes and imaginary punishments. This state of things continues for years. At length the patient dies—often, very often, suddenly. The case is explained. The muscular structure of the heart—of that organ which is to distribute strength and power to every part of the system—is impaired in action; the left side is thin, and in some cases, in which sudden death has occurred, there is little more than a strip of muscular fibre left on that side."[1] There is, perhaps, no people in the world so thoroughly enslaved to the abuse of tobacco, principally by hookah-smoking, or chewing, or both, as the Hindoo communities of India. And, perhaps, there is no population on the face of the globe, in which cowardice and early impotency form such prominent characteristics, as in this large section of the human race. Is not the excessive indulgence in tobacco, and other narcotics, churrus, ganjah, &c., one of the chief causes of such moral and physical degeneracy? Taylor, Laycock, Wright, Christison, and Pereira, and a host of other distinguished physicians, in Europe and America, consider "that habitual smoking is injurious to health, because it is liable to disorder the digestive functions," upon the perfect performance of which enjoyable exist-

[1] *Lancet*, April 16, 1859, p. 398.

ence and long life are equally dependent. Dr. Taylor, after expressing his concurrence with the theory advanced by Prout, regarding the production of some poisonous principle in the blood of tobacco consumers, remarks, that "a poisonous substance like tobacco, whether in powder, juice or vapour, cannot be brought in contact with an absorbing surface like mucous membrane, without, in many cases, producing disorder of the system, which the consumer is probably quite ready to attribute to any other cause than that which would render it necessary for him to deprive himself of what he not only considers merely a luxury, but an article actually necessary to his existence."

182. "The sallow complexions, black, broken and unsound teeth of the Germans, are matters of notoriety to all travellers." "You may," says one of them, "smell a German in any part of the room, or scent him at a quarter of a mile's distance, in the open air, if the wind be favourable."[1] How truly applicable is this description to the odours, which emanate from the tobacco-scented millions of hookah smokers of India! "The Germans," says Dr. Mouat, "are amongst the greatest and most immoderate smokers of Europe; the practical experience of their physicians as to the results of smoking is, therefore, great. I could quote from the writings of Professor Marx, of Göttingen, and other authors of equal celebrity, a counterblast against tobacco as strong as that of King James, but grounded

[1] Martin, *loc. cit.*

on a more scientific knowledge of the subject. Dr. Marx is of opinion that it changes the blood, and is the frequent source of the stomach and liver diseases, of which Germans frequently die. Still more striking, if possible, are the recorded opinions of Dr. Chapman of Philadelphia, the Professor of Medicine in the University of Pennsylvania, and one of the most eminent members of the Medical Profession in the United States. He denounces tobacco as a fertile source of disorder of digestion, and if any man is entitled to speak *ex cathedrâ* on such a subject, it is surely an American physician of large experience, inasmuch as the practice is well nigh universal among, and adopted at an early age by, the citizens of the Great Republic."[1]

183. It is a curious fact that, whilst most smokers, inclusive of the natives with whom I have conversed, are willing to admit that the indulgence in tobacco is a "bad habit," it is very extensively employed by the inhabitants of Europe, America, Africa, and Asia. Is it not surprising to find that the civilized and uncivilized, the learned equally with the ignorant,—kings, statesmen, divines, physicians, lawyers, and those of more humble pretensions to wisdom and intelligence,—all furnish innumerable devotees to worship, inhale, or imbibe the noxious fumes or juice of the *Tabacum Nicotina?* There must, indeed, be something intensely fascinating about a vegetable, the wide-spread use of

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[1] *Report on the Abolition of Tobacco in the Jails of Lower Bengal*, April 25, 1856.

which has taken deep root in every country, in which it is cultivated, or into which it is introduced as an important and revenue-returning article of commerce. Pereira and Christison, two of the highest authorities that can be cited on this subject, "consider its remarkable soothing and tranquillizing effects on the mind to be the cause of its popularity and adoption by all classes and nations, civilized and barbarous." Its aperient powers, especially during the first few years of its use, are doubtless also an inducement to the sedentary, and naturally costive. But how these can explain its excessive use,—or to such a degree as to interfere with the digestive functions, to produce disturbance of the heart's action, nervous depression, muscular tremors, vertigo, headache, inaptitude for mental and physical exertion, and to predispose to delirium tremens, or to expedite the advent of imbecility, fatuity, or downright mania in persons hereditarily predisposed to mental disease, is unintelligible on any other ground than on the principle of that absence of self-abnegation, which, in numerous cases, permits excessive indulgence in other luxuries, as also in food and drink.

184. A mass of weighty testimony has already been adduced to prove the highly poisonous nature of tobacco; and also the injuriousness of the immoderate or excessive use of it. It is unreasonable to suppose that a poison like nicotine, a single grain or drop of which will kill a dog, and which exists in great abundance in the juice, powder and smoke of tobacco, can daily penetrate the mucous surfaces, and become mixed with the blood, to

be subsequently diffused over the entire system, without detriment. It is true that habitual smoking lessens the perceptible subjective influence of the poison on the digestive and nervous system, and *apparently* enables a person to withstand the evil effects of the practice to a certain but undefined extent. Do not the same phenomena occur among excessive alcoholic drinkers, and confirmed opium eaters? And who will be bold enough to pronounce immoderate spirit drinking, and opium eating or opium smoking to be innocuous? But, as with the spirit drinker, and opium eater or opium smoker, so with the confirmed smoker and chewer of tobacco, dyspeptic disorders, muscular and nervous enervation, palpitation and derangement of the heart's action, occasional apprehension of impending death, hypochondriasis, depraved sensations and movements arising from the disturbed functions of the sensory and motor nerves, epileptic convulsions, and derangements of the mental faculties, are symptoms consequent on the abuse of tobacco, notwithstanding the apparent, but physiologically unreal, impunity which prolonged habit is reputed to confer. And how can it be otherwise with such a powerful poison as nicotina circulating in the blood, in quantities increasing in the strict ratio of the increment in the consumption of tobacco?

185. But, it has been argued that the moderate use of tobacco is not injurious. What the limits of moderation may be, it is very difficult to define. From M. Malapert's experiments, "it was found that, in the smoke of tobacco extracted by inspiration, there is ten

per cent. of nicotine. Thus, a man who smokes a cigar of the weight of seventy grains, receives in his mouth seven grains of nicotine mixed with a little watery vapour, tar, empyreumatic oil, &c. Although a large proportion of this nicotine is rejected both by the smoke puffed from the mouth and by the saliva, a portion of it is, nevertheless, taken up by the vessels of the buccal and laryngeal mucous membrane, circulates with the blood, and acts upon the brain. With those unaccustomed to the use of tobacco, the nicotine, when in contact with the latter organ, produces vertigo, nausea, headache, and somnolence; whilst habitual smokers are merely thrown into a state of excitement similar to that produced by moderate quantities of wine or tea (?). From further investigations it is found that the drier the tobacco, the less nicotine reaches the mouth. A very dry cigar, whilst burning, yields a very small amount of watery vapour; the smoke cools rapidly and allows the condensation of the nicotine before it reaches the mouth. Hence it comes that the first half of a cigar smokes more mildly than the second, in which a certain amount of condensed watery vapour and nicotine, freed by the first half, are deposited. The same remark applies to smoking tobacco in pipes, and if smokers were prudent, they would never consume but half of a cigar or pipe, and throw away the other. Smoking through water, or with long tubes and small bowls, is also a precaution which should not be neglected."[1]

[1] *Lancet*, Sept. 1, 1855, p. 200.

According to these experiments, the minimum of tobacco that can be smoked, in pipes, hookahs, or cigars, consistently with the maintenance of the functional integrity of the nervous, circulatory, and digestive organs, finds no adequate expression in the annals of what is termed the moderate smoking of the present day.

186. It has further been contended that, what has been considered the moderate indulgence in the use of tobacco, like the moderate imbibition of spirituous or malt liquors, is not hurtful. Those, who argue in this manner, lose sight of the important primary fact that the two cases are by no means parallel. The poisonous principle of tobacco is completely unassimilable. No poison, which is so powerfully antagonistic, as nicotine is known to be in the minutest quantities, to the vital manifestations of the human economy, can possibly be so, except, perhaps, in infinitesimal doses, the proper apportionment of which might well overtax the ingenuity of the disciples of Hahnemann. Now this is not the case with alcoholic and malt liquors, but more particularly with the latter. When these are taken with meals, in addition to the wholesome stimulus which they impart to the body, if taken in moderation, they represent a certain proportion of respiratory aliment, capable of assimilation, and of ultimate utilization as such. It is only when these beverages are indulged in to excess, and at unseasonable periods,—any period apart from that when the principal repast of the day is taken being such, as a general rule,—that they prove so deleterious.

187.—3rd. *The supposed antiseptic, and protective or preventive powers of tobacco unsupported by experience.* —After having taken some pains to find evidence in favour of this popular idea, I have utterly failed to discover a single reliable fact in support of it. Not one of the previously quoted authorities, to whose able testimony a multitude of other witnesses of equal celebrity might be added, favour the theory. The fact appears to be that the antiseptic, and protective or preventive virtues, ascribed to smoking or chewing tobacco, deserve only to be dismissed as popular fallacies.

188.—4th. *The fears that have been entertained regarding the dangers supposed to follow the absolute and immediate withdrawal of tobacco from those persons, who may have been accustomed to its use from childhood, till the middle, or later periods of life, are, in an overwhelming majority of cases, physiologically, destitute of the slightest foundation in fact.*—It was owing to the belief that long habit not only confers an immunity from the evil effects arising from the use of tobacco, but that it actually renders its use essential to the preservation of health, that the late Bengal Medical Board were led to observe that in the case of native convicts, and of Europeans of a corresponding class, the habit of tobacco smoking is acquired at so early an age, that, in the adult, the use of it in some shape or other has become, instead of a luxury, as much a necessary of life as the salt and other condiments which nature prescribes as an indispensable adjunct, or necessary to their daily meals;" and that the Honourable Court of Directors stated, not

much more than three years ago, that "The disuse of opium unless as a medicine seems unobjectionable, but discretion is necessary in withdrawing tobacco from persons who have always been in the habit of using it."

189. Dr. Mouat issued the following Circular, No. 38, dated 26th of February, 1856, to all Magistrates in charge of Jails, within the wide circle of his superintendence, with a view to ascertain from the collective testimony of the Medical Officers, whether the abolition of tobacco, &c., which had, at that time, been withdrawn for upwards of three years, had, or had not, proved prejudicial to the health of the prisoners. The Circular runs as follows:—

"The withdrawal of tobacco from all prisoners in the jails of the Bengal Presidency having been accomplished for more than three years, the means of forming a correct judgment upon the result of this measure must now exist. My attention having been directed to the subject, I am desirous of submitting a special report to the Government regarding it, for the information of the Honourable Court of Directors. To enable me to do this before I leave the Presidency, to inspect the prisons in Eastern Bengal, I have the honour to request that you will call upon the Civil Surgeon of your station to furnish me, within ten days from the receipt of this order, with a special statement upon the effects of the withdrawal of tobacco upon the prisoners under his charge. Should he be of opinion that it has operated injuriously upon their health, I shall feel obliged by his stating in detail the grounds of his belief, and by

his affording me positive illustrations from his Case Books, in support of his statements. The question is one of considerable interest in a physiological point of view, and is deserving of very careful consideration."

190. Dr. Mouat delivered his report to the Government of Bengal, on the 25th of April, 1856. It comprised a brief, but comprehensive digest of the individual opinions of fifty medical officers, including in their ranks some of the ablest and most experienced physicians in the Bengal Medical Service. Out of the fifty medical officers, thirty-three considered that the withdrawal of tobacco from the prisoners had not been attended with injury to health; fourteen gave undecided or modified opinions only; the remaining three, reasoning from erroneous data rather than from practical observation, basing their arguments upon popular fallacies rather than upon ascertained facts, according to the Baconian method of first collecting the data, and then proceeding to deduce conclusions, deemed the sudden and entire withdrawal of the weed from persons, who had been accustomed to consume it all their lives, injurious to health. From a review of the testimony of the fifty scientific witnesses, as also from a consideration of the opinions of experienced continental and American physicians, Dr. Mouat concluded—and in his conclusion, I am sure, most scientific men will concur,—"that the mass of positive testimony accumulated in India of the absence of any ill effects from its cessation, even in those habituated to its use from infancy, so fully bears out the opinion entertained regarding it by the most eminent

authors of modern times in Europe as to justify the belief that it is a mere luxury; that it is not needed for the performance of any healthy function in the human economy; and that its denial to criminals is a wise, sound, and judicious measure of prison discipline.' He adds, "The very rare cases in which the *sudden withdrawal* is likely to be injurious, are amply provided for, in the discretionary power vested in Civil Surgeons to employ it as a medicine whenever they may deem it necessary to do so."

CHAPTER XI.

ON THE ABOLITION OF OPIUM-EATING.

191. The use of opium, by the natives of this country, is fortunately not nearly so prevalent as that of the allied narcotic, considered, at some length, in the preceding article. The practice, however, is not at all infrequent amongst the inhabitants of Bengal, Behar, Orissa, Assam, Arracan, North-West Provinces, Rajpootana, Central India, Goozerat, and in all the three Presidency cities. In fact, the habit prevails to an undefinable extent in most districts; but particularly among the peoples of the large towns. It is more commonly met with among the lower than the higher classes; and most prevalent among the most degraded members of the community. Hence, a considerable proportion of the criminals, who crowd our prisons, are found to be addicted to the demoralizing and pernicious habit. As the usual mode of consuming opium habitually in India is by chewing, eating, or rather by swallowing it in the form of pill or bolus, I propose to consider the subject with reference to the effects of the drug, when taken in from *one* to *six grain* doses daily; when consumed in gigantic doses varying

from *half a scruple* to *two or three drachms;* and, lastly, with regard to the best mode of effecting the harmless abolition of the drug, in any of these doses, or in what I shall term incipient and confirmed opium-eaters.

192.—1. *Effects of opium-eating when taken in from one to six grain doses.*—Those persons who have not exceeded the maximum quantity here prescribed, may be viewed as incipient opium-eaters. To the question, "why did you begin to eat opium?" the very general reply is, "to relieve pain." So soothing is the habitual employment of a small dose to those afflicted with chronic, or even temporary, affections of a painful nature, that, after the indulgence has been continued for a brief period of time, it is very difficult for a person to abandon it *sponte suâ.* The only indications legitimately attributable to the practice, under these circumstances, are obstinate constipation, dyspepsia, diminished appetite, increased somnolency, inaptitude for mental exertion, and sluggish action of the liver, as manifested by a yellow tinge of the conjunctival membranes, and of the skin generally, and by deficiency of bile in the stools. The intensity of the development of these symptoms increases with the increase of the daily dose. The signs are more marked in those who consume *five* or *six*, than in those individuals who have never exceeded *two* or *three* grains. Time also modifies the symptoms. For instance, if a person has, in the course of a year, gradually augmented the dose up to six grains *per diem*, the morbid effects are much more

forcibly developed in him than in a sufferer, who has occupied three or four years in reaching this point.

193.—2. *Effects of opium-eating when the drug is taken in half-scruple, scruple, two scruples, one, two or three drachms doses.*—It is a peculiarity in the history of the consumption of vegetable poisons by mankind, that when once the use of any one of them is fairly confirmed, it is not only difficult to relinquish the luxury spontaneously, but the indulgence grows with irresistible force, with every month and year over which it has been unremittingly prolonged. The small doses of opium, which might originally have been taken for the purpose of relieving some bodily distress, itself often of a temporary and trivial nature, are gradually increased, as time rolls on, to the *ten, twenty, forty, sixty, the hundred and twenty, or hundred and eighty grain* daily dose of the confirmed opium-eater; these doses being respectively *two and a half, five, ten, fifteen, thirty, and forty-five times* as much as has been known to prove fatal to a "stout muscular" adult unaccustomed to the use of the drug. So irresistible, indeed, is the enemy when once he has made such advances, that, out of the scores of cases that have come under my observation, I have never known a single individual to succeed in relinquishing it of his own accord, though, in many cases, I have been told by the sufferers themselves, that they, becoming conscious of the evil effects of the habit upon their constitutional powers, have sometimes attempted to do so, but without permanent success. My native doctor also assures me that, during the nine-

teen years he has served in this opiophagous neighbourhood, he has never known an opium-eater, confirmed in its use by having reached any of the large doses above referred to, spontaneously succeed in abandoning the narcotic. He has frequently known Bheels summon temporary courage to abstain from a few doses with a view to their eventual discontinuance. But, without exception, they have rapidly relapsed into the old habit.

194. Some portions of Dr. Oppenheim's description of the effects of opium-eating, in Turkey, are, according to my observation, so applicable to the condition of the confirmed Indian opium-eater, that I cannot do better than transcribe them in this place. After summarizing the causes,—such as long-continued diarrhœa, chronic coughs, &c. which lead to the habitual consumption of opium, he says, "The habitual opium-eater is instantly recognized by his appearance. A total attenuation of body, a withered, yellow countenance, a lame gait, a bending of the spine, frequently to such a degree as to assume a circular form, and glassy deep sunken eyes, betray him at the first glance. The digestive organs are in the highest degree disturbed, the sufferer eats scarcely anything, and has hardly one evacuation a week: his mental and bodily powers are destroyed—he is impotent. By degrees, as the habit becomes more confirmed, his strength continues decreasing, the craving for the stimulus becomes even greater, and, to produce the desired effect, the dose must constantly be augmented. After long indulgence, the opium-eater becomes subject to nervous or neuralgic pains, to which

opium itself brings no relief." To these indications may be added permanent contraction of the pupils; a peculiar staring expression of the eyes; impairment of vision; premature development of the *arcus senilis;* diminished intonation of voice; diffidence or hesitation in answering questions. Constipation is certainly a constant symptom, during many years, till the culminating doses have been reached, and beyond which, it has not been deemed safe to increase them. But, after this point has been gained, the bowels soon become regular; and the least departure from the usual routine or diet, or the accustomed dose, is followed by intestinal derangement, prostration of strength, and great mental distress. It is, indeed, when this stage has been fully developed, that the opium-eater finds himself so thoroughly helpless—so completely victimized by a practice, the continuation of which, he knows full well, might have been prevented, at the commencement, by the exercise of a little self-control. He is too much under the fascinating influence of the drug to recede by his own resolution; for he finds that the least recession, or departure from the usual routine, is succeeded by an amount of bodily and mental suffering, which he is afraid to encounter. He is conscious of having reached the maximum quantity that can be taken consistently with safety to life. The extreme misery of the old opium-eater, in these examples, soon becomes intolerable. And, provided he has not already succumbed from some one or other of the "numerous ills which flesh is heir to," he eventually, in a fit of despondency, or temporary

insanity, augments his dose of the narcotic beyond safe limits, and thus falls a victim to one of the most degrading habits that frail human nature can give way to. If a patient, so poisoned, be brought into hospital in time, the application of the stomach-pump is the only reliable practice; because the stomach is generally insensible to the action of emetics. After the whole of the opium has been pumped up, I have found it good treatment, to inject into the viscus half an ounce of neat brandy, mixed with five grains of the sesqui-carbonate of ammonia, and half a drachm of sulphuric ether. The remainder of the restorative management consists in constant endeavours to rouse the patient to a state of wakefulness, by strongly applied frictions with stimulating powders, such as mustard and ginger, occasional dashing of cold water over the head and trunk, and by the use of galvanism, &c. When resuscitation has been effected, it will be found practicable, whilst these sufferers are undergoing treatment, in well-disciplined military and jail hospitals, to reduce the accustomed dose, day by day, by administering from three to five grains of sesqui-carbonate of ammonia in bitter infusion, every three or four hours. In three cases, in which I have had to apply the stomach-pump, and the subsequent treatment above described, I have never found it necessary to give more alcoholic liquor, than that which was injected into the stomach before the withdrawal of the stomach-pump, viz. half an ounce of brandy.

195.—3. *Best mode of effecting the harmless abolition of opium in incipient and confirmed opiophagi.*—

In those incipient cases, where the quantity of opium consumed has never exceeded six grains per diem, there need be no hesitation about insisting upon the immediate and absolute interdiction of the drug. In several cases of this description, where I have succeeded in prevailing upon individuals to relinquish the luxury, at once, they all complained of much distress of mind for some days afterwards. During this transitionary period, these persons took infusion of cheyretta and sesquicarbonate of ammonia, three times a day, till the want, created by the sudden withdrawal of the narcotic, disappeared. In all the unnatural somnolency, constipation, frequent dyspeptic attacks, loss of appetite and mental inaptitude vanished; and the general health rapidly improved.

196. Though the abrupt withdrawal of opium from persons, who have been in the habit of using small quantities, may be carried out without the slightest risk of bad consequences resulting to the bodily or mental powers, I am convinced from upwards of five years' experience amongst a population, many of whose constituents are addicted to this vice, that the sudden discontinuance of the drug, by those who have been accustomed to take it in very large doses, during the greater part of their adult lives, is not unattended with danger to health, or even to the life of the sufferer. The danger is modified by the period over which the drug has been consumed, as also by the quantities used at the time when its immediate prohibition has been determined upon. Dr. Oppenheim states, " When this

baneful habit has become confirmed, it is almost impossible to break it off; the torments of the opium-eater, when deprived of this stimulant, are as dreadful as his bliss is complete when he has taken it; to him night brings the torments of hell, day the bliss of paradise."

197. Pareira relates a case, which, as it bears upon the question under discussion, may be appropriately quoted here:—"In 1841, an opium-eater, aged 26, was admitted into the London Hospital. He was accustomed to take two or two and a half drachms of solid opium daily. He originally began its use to relieve the attacks of angina pectoris. He was now most anxious to leave off this habit, though the difficulty of doing so was extreme. It did not diminish, but, according to his assertion, augmented his appetite, for, after each dose, he ate voraciously. At first, when he commenced its use, it caused dryness of the mouth and throat and constipation, but latterly his bowels were regular, as before he commenced the use of the drug. His pulse ranged from 88 to 96. His urine was somewhat less than natural. The condition of his skin varied; in general it was dry, but occasionally was covered with profuse perspiration. He described the effect of opium on his mental faculties as those of calmness, comfort, and serenity. Under its use, he was able to support great bodily and mental fatigue. He never experienced the exhilarating and pleasurable sensations described by De Quincey. His feelings, when not under the influence of opium, were distressing. Mr. Davies (an intelligent pupil) described his condition at this time as

follows:—eyes hollow, dark and sunken; features haggard; hands trembling; voice and manner anxious; mouth parched; appetite wanting; sleeplessness. Unable to sleep for want of his accustomed dose, he used to pace the wards of the hospital at night almost frantic, though quite sensible of his miserable condition, and anxious to abandon the practice." With regard to the effects arising from the sudden abstinence from the allied habits of opium-smoking, the same author says that "coldness is felt over the whole body, with aching pains in all parts; diarrhœa occurs; the most horrid feelings of wretchedness come on, and if the poison be withheld, death terminates the victim's existence." In Dr. A. T. Thompson's case, alluded to in *Taylor on Poisons*, it was found that if the patient "passed over the usual time for taking a dose, she felt the most distressing sensations about the joints, not of pain, but such as she was unable to describe. She suffered from involuntary motions of the arms, fingers and toes, numbness in the limbs and body generally, profuse perspiration, nausea, vomiting, and loss of appetite, a saline taste in the saliva, and a bad taste in the mouth; tremors in the limbs, great sense of debility and lassitude. The memory and mental powers generally became greatly impaired, attended by a miserable depression of spirits. These symptoms were all relieved by a repetition of the dose."

198. According to my own experience, the most invariable symptoms, in those persons who have accidentally or intentionally abstained from a few large

doses, have been constant wakefulness, mental inactivity and oppression, intense depression of spirits, or a state resembling, but by no means identical with, delirium tremens, diarrhœa, severe aching pains in the head, back and extremities, a sinking sensation at the pit of the stomach, prostration of strength, an unsteady gait, and general tremors of the extremities, indicating diminution of the controlling and directing power of the nervous system. There is also dilatation of the pupils, and dulness or injection of the conjunctivæ, which sometimes merges into simple ophthalmia. The other symptoms, which are by no means infrequent, are fatuity, melancholy, dementia, temporary insanity, accompanied by suicidal tendency. In March, 1857, a Bheel havildar becoming too conscious that the two drachm doses of opium, which he had been in the habit of consuming daily for many years, were breaking down his constitution, determined to abandon the practice at once. He did so. He suffered from intense mental wretchedness, diarrhœa, vomiting, pains all over the body, constant insomnolency, which, on the second day, merged into fatuity, accompanied by tremors, a rapid, weak, and thready pulse. His usual dose was resumed on the third day, and the diffusible stimulant and bitter infusion before mentioned were regularly administered. But the soundness of his mind was not firmly re-established till he had been under this treatment for two months. On the 16th of October, 1859, a havildar of the Bheel tribe, who has been a confirmed opium-eater since the Mewar Bheel Corps was raised in 1841, was

admitted into hospital suffering from intermittent fever. His dose of opium is two scruples per diem. He is fifty years of age. He looks an octogenarian, and is a perfect type of Oppenheim's opium-eater, with this exception—his bowels are opened once daily. He neglected to take his usual dose on the day prior to admission, and had none on the day he was received in hospital. He suffered from diarrhœa, great mental misery and depression, collapse and prostration of strength, and sunk into a state of fatuity or low muttering delirium. He had no attack of fever in hospital. On the third day, after the interruption of the opium, his usual quantity was given and subsequently continued daily. He also took sesqui-carbonate of ammonia and infusion of cheyretta till the 2nd November, when he was allowed leave of absence for one month to remain at his village. I saw him yesterday (November 28th). He was then doing well. A sepoy was admitted into hospital on the 5th October, suffering from spreading ulceration over the external malleolus of the left foot. He had been in the habit of taking a drachm and a half of solid opium during the past four years. He took none on the day of admission into hospital. At twelve midnight, he quietly left the hospital, went straight to his lines, and made an attempt upon his life. He was frustrated in accomplishing his mad design by the sentry on duty near his hut. He was violently delirious for two days afterwards, notwithstanding the resumption of his opium on the second day after it had been omitted. He is now doing well, and has given

no more trouble. In April, 1859, a confirmed opium-eater, suffering from dracunculus, suddenly left the hospital at midnight. He walked straight to his village, and there put an end to his life by hanging himself with his *puggree* and *kamarbund*. From subsequent inquiry, it came out that he had discontinued the drug two days before.

199. But, though the abrupt discontinuance of opium, by those who have consumed it regularly in gigantic doses, during many years, is undoubtedly dangerous to the integrity of both body and mind, I am nevertheless of opinion that, to whatever extreme the indulgence may have been carried, the drug may be gradually and successfully withdrawn under proper management. It is almost impossible for any one, addicted to its excessive use, to abstain from it, permanently, by the force of his own feeble resolution. The misery and depression, consequent upon the interruption of a single dose, are always sufficient inducement to ensure the recommencement of the practice, unless the sufferer resort to some other baneful narcotic, or even to excessive indulgence in the hocussed spirits of the bazar as a substitute. But, in prisons, where every act of the criminal ought to be under authority and control, this weakness of human nature need not be allowed to interfere with the gradual abolition of a habit, the encouragement of which is as destructive to health as to prison discipline. Thus, I feel convinced, that the drug, even in the most inveterate and advanced cases, may be speedily, but still gradually, reduced, day

by day, till the minimum of a grain or so *per diem* has been reached; after which, it may be altogether abolished, without risk to either body or mind. Bitter tonics, diffusible stimuli, and a reasonable generous diet, suited, of course, to particular cases, should be had recourse to, during the gradual process of prohibition.

200. It has been wisely ruled, in Bengal and the Punjab, that those persons who suffer, or are, in the opinion of the medical officer, likely to suffer, from the immediate withdrawal of opium, should become residents in hospital. "If," says Dr. Mouat, "any prisoner absolutely need opium, he should become an inmate of the hospital, until he is cured; but the continuance of opium as an indulgence, on the mere presumption of its necessity, must cease. With those sent to hospital, the plan recommended by Dr. R. Dunglison, to obviate the bad effects believed to result from the habitual use of opium, and to wean rapidly from the habit, should be tried. It consists in the administration, beginning with small and suitable doses, of the fœtid spirit of ammonia." Again:—"It is altogether opposed to anything approaching to prison discipline, to permit prisoners to indulge in narcotics; and if opium be allowed, ganja, and all similar drugs, should, by a parity of reasoning, be permitted. The danger of withdrawal has, I am convinced, been exaggerated, if not altogether misunderstood; and as the civil surgeon has the power to receive in hospital all to whom the prohibition or withdrawal would be injurious, I cannot see that any

real harm will be done by withholding all narcotics, except in the cases above referred to." In the Punjab, "all tobacco, opium, churrus, or other luxuries, are equally prohibited. If opium is ordered by the medical officer for any one, the prisoner receiving the drug is to be considered a hospital patient, and will receive hospital rations."

201. Though concurring in the general tenor of the above quotations, I find that my experience is antagonistic to that derived from an experiment, directed by Dr. Mouat, in one of the jails within his jurisdiction. Writing, on the 15th September, 1857, he says: "In one of the Assam jails, situated in a district where the population is plagued with the most deplorable amount of opium-eating, I directed some of the most confirmed and abandoned consumers of that narcotic to be placed in solitary confinement, and entirely debarred from opium in any form, without the slightest preparation for the change. The result of the experiment was that the victims of the vice passed through a stage of great mental prostration and misery, without the development of any signs of nervous irritability, such as are exhibited in delirium tremens. They soon rallied from this state, their digestive powers increased, and they, in every case, ultimately and rapidly improved in health." If, from this experiment, we are to infer that, even to those individuals who have been accustomed to use from a scruple to two or three drachms of opium daily, for long periods, no real bad consequences happen, from the instantaneous prohibi-

tion of the drug, I must be permitted to state, with every deference to the high authority of the physician under whose auspices the experiment was conducted, that the reported result runs quite counter to my observation. I have rarely known a single instance of large doses having been suddenly interrupted, even for very short periods, without the speedy supervention of alarming bodily or mental ailments, or both combined. And from *à priori* reasoning, one would naturally expect that all these morbid manifestations would be aggravated, in degree and severity, by the depressing circumstances, connected with incarceration, in Indian prisons.

202. The impunity with which opium can be abandoned, without endangering body or mind, is entirely dependent upon the period during which it may have been used; upon the doses that have been reached; and upon the length of time, over which the maximum doses have been continued. If it has been taken, in small portions, ranging from one to six grains, the drug may, as has been previously remarked, be left off at once, not only without detriment, but with ultimate benefit to the general health. But, if it has been consumed in large quantities, during a long series of years, the whole economy becomes so subdued and inured to its baneful influence, that it is, in a very large majority of these cases, positively unsafe to enforce its abrupt and immediate abolition. Without, therefore, supposing for a moment that the use of opium cannot be successfully prohibited in our prisons, I am nevertheless strongly

impressed with the conviction that the only safe plan of withdrawing the narcotic, in the truly confirmed opium-eater, is to insist upon its gradual abandonment by a daily reduction of the doses under the orders and care of the medical officer. The exhibition of the fœtid spirits of ammonia, or the sesquicarbonate of ammonia in bitter infusion, during the period of gradual prohibition, is a precautionary measure of great importance, and should never be omitted in the management of all these extreme cases.

CHAPTER XII.

ON THE CLOTHING OF PRISONERS.

203. If the geographical positions, and mean temperatures of different situations, in India, were alone considered, a casual observer might conclude that the clothing of Oriental prisoners is a matter of but minor importance.

Months.	Stations.								
	Kherwarrah,[1] 5 Years ending 1858.			Chinsurah,[2] 1855.			Bombay,[3] 1858.		
	Monthly Mean Temperature.	Monthly Mean Range.	Monthly Extreme Range during 1859.	Monthly Mean Temperature.	Monthly Mean Range.	Monthly Extreme Range.	Monthly Mean Temperature.	Monthly Mean Range.	Monthly Extreme Range.
January.....	64·37	21·09	34·00	64·84	16·32	32·00	73·30	14·60	29·00
February	70·74	24·52	40·00	69·96	14·22	31·00	75·20	14·20	26·50
March.....	78·71	23·98	40·00	76·18	15·08	30·00	80·00	11·70	20·90
April	88·70	23·32	34·00	80·25	12·32	32·25	84·40	12·00	18·80
May	93·82	18·13	27·00	84·48	10·08	22·75	86·20	10·60	15·90
June	87·46	11·83	36·00	84·39	7·53	17·75	84·60	9·00	18·00
July.....	82·11	8·98	25·00	81·05	4·16	11·75	81·20	7·50	14·10
August	80·17	8·90	25·00	82·45	5·39	15·50	80·50	7·20	11·50
September ...	81·07	11·62	22·00	80·92	4·93	13·00	80·40	8·30	14·10
October	77·10	19·33	27·00	78·97	7·60	18·00	81·20	11·40	18·70
November ...	68·01	25·90	34·00	71·25	14·40	27·00	79·10	13·50	19·00
December	63·74	21·92	33·00	64·15	16·65	24·25	75·60	13·10	20·20
Annual Means	78·00	18·29	31·41	76·55	10·72	22·93	80·14	11·09	18·89

[1] *Vital Statistics of the Mewar Bheel Corps*, MS., January 12th, 1859, and *Meteorological Register* ending December, 1859.

[2] *Meteorological Register*, kept at Chinsurah during 1855, I.A., No. 6. By Professor Thwaytes.

[3] Dr. Leith's *Mortuary Reports*, for 1857–58.

It is, however, necessary to examine the variations and extremes of temperature,—often as sudden in advent as they are great in degree, — before an adequate notion can be formed regarding the absolute indispensability of a certain amount of apparel being worn, in order to preserve health, to prevent disease, and to facilitate convalescence from illnesses of various kinds, their consequences and sequelæ. This will be rendered apparent after a perusal of the preceding table, which affords a very fair idea of the effects that the monthly mean and monthly extreme ranges must exercise upon the cutaneous surfaces of inadequately clothed persons. And the following facts, illustrative of the annual extremes of temperature, at Kherwarrah, during six years, are still further corroborative of this conclusion:—

Years.	Highest Extremes.			Lowest Extremes.			Annual Extreme Range.
1854	115, at 4 P.M.,		May 23 and 25 ...	46, at sunrise,		February 6	69
1855	106	„	May 5 to 11, and June 8 to 11.	43	„	Jan. 15, 16, and 19.	63
1856	109	„	May 20, 21, and 22	47	„	Dec. 9 to 13	62
1857	109	„	June 14 and 15...	43	„	Dec. 17.....	66
1858	110	„	May 14, 15, and 17	43	„	Jan. 26.....	67
1859	113	„	June 1	45	„	Jan. 24.....	68

Though the facts contained in these statements are only applicable to the places referred to, they may, nevertheless, be viewed as representing a near approximation to the truth in regard to many other localities in India. Generally speaking, the temperature of the air

is less variable in Madras than in Bombay; in Bombay than in Bengal Proper; in Bengal Proper than in Rajpootana; in Rajpootana than in the North-West Provinces; in the North-West Provinces than in the Punjab. It is sufficiently changeable, in almost every situation, to render a certain quantity of clothing essentially necessary, during the drying up months of September and October, and the subsequent cold months of November, December, January, and February.

204. But the necessity for a definite supply of clothing, during the more inclement seasons, in this country, is not entirely based on the daily, monthly, or annual ranges of temperature. These alternations would not prove so detrimental but for the existence of malarious exhalations, which abound at the close of the monsoon, and the beginning of the cold weather. Nothing favours the operation of malaria so much as defective protection to the skin. During the non-malarious months of April, May, and June, the temperature is seldom so low as to interfere with the freest action of the perspiratory functions; and, during July and August, the temperature is generally equable and rarely so depressed as to check the perspiration. But at the end of September and in October, when malaria is more abundantly generated than during any other part of the tropical year, the previous comparative equableness of temperature is suddenly replaced by marked vicissitudes. Hence, attacks of malarious fevers are extremely common at this period; and the continuance of very wide ranges, during November and

December, favours the advent of primary and relapsing invasions of intermittent fever, and also the development and persistence of obstinate complications and sequelæ, from which recovery is difficult—often impossible, notwithstanding the most skilful treatment,—unless the repressing influence of external changes of temperature be counteracted by efficient clothing. "Towards the termination of the rains, and the beginning of the cold weather, the jails are in the most sickly state; the days are still hot in the extreme, while the nights are raw and chilly. Fevers of the worst description prevail, and what is a great deal worse, the sequelæ of fevers, in the shape of intractable visceral disorders and dysenteric affections of the most obstinate nature, both of which, it will be readily admitted, require external warmth, as an essential part of their treatment. As the cold season more decidedly shows itself, pulmonary affections, depending on the sudden change of temperature and the unprotected state of the convicts, very clearly develop themselves."[1] To such an extent indeed are the fearful ravages of malarious fevers, and consequent damage to the abdominal viscera,—the spleen, liver and intestinal canal,—increased by these atmospheric alterations, that, unless the skin is thoroughly shielded from them, during the malarious and subsequent cold months, therapeutic management is too frequently attended with deplorably little success, as may be seen from Statement VII., in the Appendix G. to the chapter on the *Sickness*

[1] Hutchinson.

and Mortality among Indian Prisoners. In estimating the amount of clothing required, therefore, we must always bear in mind, that we have not only to protect the cutaneous surface from sudden changes of temperature, but to effect this in such a manner as to avert, as far as possible, the supervention of febrile disease and sequelæ, and to aid convalescence from these, when they do supervene.

205. Having, in the preceding observations, briefly explained the reasons why a certain quantity of clothing is absolutely indispensable, during the malarious and subsequent cold months, in this country, it will now be convenient to examine, with as much minuteness and accuracy as practicable, the different systems of prison clothing throughout the Indian Empire.

STATEMENT A.—*Prison Clothing in Lower Bengal.*

Seasons.	Articles of Clothing.	Colour and Marks.	Dates when issued.
Hot and rainy seasons.	Day dress { 1 Cotton Dhootie, or loin cloth; 1 Cotton Chuddur, or scarf...; 1 Gumcha ..... }	White, brown, or red.	One dhootie, and one chuddur on 1st January and 1st July, one blanket in October, gumcha and tat puttee yearly.
	Bedding..... Tat Puttee, 6 feet by 2 feet.		
	Hospital. { I have failed to find any extra clothing allowed.		
Cold season.	Day dress... As above.		
	Bedding ... As above, with a blanket.		
	Hospital ... Apparently nothing extra.		

The prevailing rule, in Lower Bengal, down to the close of 1858–59, was to give each prisoner from seven to nine or ten yards of coarse cotton cloth on the 1st

January and 1st of July of each year. Out of this supply, he makes his dhootie and chuddur. A piece of tat puttee, or matting, is allowed to separate the criminal's body from the flooring of the sleeping wards, or of the hospital, at nights. At the commencement of the cold season (October or November), a blanket is served out to each individual. This is taken back into store on the approach of the hot season in March. A gumcha is also granted. And, from the official jail reports, it would appear, that a small pillow is sometimes supplied. When Dr. Hutchinson wrote, the Bengal convict was allowed, what to him was tantamount to two suits of cotton cloth, in the course of the year; but this consisted merely of a cloth about his loins, called a dhotee, and a loose scarf or chuddur thrown about his naked shoulders. "During the hot season, it were, perhaps, needless to complain, to say that the above clothing is not enough; but, at other seasons, which may fairly be said to constitute two-thirds of the year, it certainly is not. During the rains, the convicts are frequently drenched to the skin, once or oftener, in the course of the day, and when they come to the jail to be locked up for the night, having no change of apparel, they are obliged to remain exposed, almost in a state of nudity, to the reduced temperature, which generally prevails at such times. During the cold season, or Indian winter, it is true the convicts are allowed each one coarse blanket; and scanty as this provision is, and inadequate to the purpose contemplated, it is often not served out, until the season is too far advanced to render it of any

benefit or advantage." It will be observed, from a comparison of this quotation with the contents of the above tabular statement, that little or no change has taken place in the clothing formerly employed. But it surely must be the exception now to issue the blanket so late in the cold season as to negative the benefits derivable from an earlier issue of it. It is better to give it out too early than too late.

206. The following information culled from Dr. Mouat's *Report* for 1855–56, is calculated to show that the clothing department is open to improvement; for it must be remembered that no tangible alteration has been made in the supply, or in the quality of that supply down to the present time. Dr. A. J. Sheridan states that, at Bheerbhoom, the clothing has been very insufficient, many (prisoners), throughout the greater part of the cold season, having been almost naked. The new blankets served out during the year were smaller than usual, and of much inferior quality. Dr. J. B. Allan states that at Behar, a piece of dosootie, seven yards long, is served out in the month of May, and a similar quantity of cloth and a blanket in October, and that the former is of sufficiently good quality, but the latter is not so good as desirable. Dr. F. R. Farncombe states that, at Bhaugulpore, the blankets allowed are of thin texture, and that one piece is not sufficient to keep the prisoners warm, during the cold season. Sub-Assistant Surgeon J. J. Durant states, that, at Chumparun, the winter clothing is insufficient,—that the blankets allowed were so small, and of so inferior a

quality, as to afford very inadequate protection to the body from the cold and inclemencies of the weather. Dr. F. J. Earle states that, at Dinagepore, the clothing is not sufficient. It is not enough that one extra blanket should be supplied for covering at night. Sub-Assistant Surgeon Callachund Dey states that, at Furreedpore, he would recommend the allowance of a gumcha to protect the prisoners from the inclemencies of the rainy season; that the nights of the rainy season are mostly chilly, and that, as the blankets are withdrawn at the expiration of the cold season, some better covering for the body than a cotton sheet, which sometimes remains in a wet state, is essentially necessary. Dr. F. Duka states that, at Monghyr, the clothing during the dry season is sufficient, but not so during the rains, when the prisoners return from work drenched through, and have to sleep on cold floors, and in wet clothes; and that the half-yearly clothing was irregularly issued. Dr. P. F. Bellew states that, at Mymensing, the clothing of the prisoners was rather scanty; and that it would be advisable to give the prisoners more frequent opportunities of changing their clothes, in order that they might be washed, so as to make a clean suit available twice a week. Dr. W. S. Dicken states that, at Patna, the clothing supplied to the prisoners was sufficient for the hot season, but not so for the cold. Dr. A. Fleming states that, at Sarun, the clothing supplied to the prisoners was of a very inferior quality, that the blankets were very thin, and that the prisoners complained of its not affording them

sufficient protection from the cold. Dr. H. Williams states that, at Tipperah, the rezais issued to the prisoners were not so well calculated to protect them from the effects of sudden atmospheric changes as the blankets formerly supplied; the latter being less liable to be torn, and better calculated to keep out damp and rain. Apothecary J. F. Pingault states that, at Nowgong, the blankets issued to the prisoners were of a very inferior quality, extremely small and flimsy in comparison with those issued in 1854.

207. The officers in medical charge of the Alipore, Balasore, Bancoorah, Baraset, Burdwan, Chittagong, Cuttack, Dacca, Midnapore, Noakally, Nuddeah, Pooree, Purneah, Rajshahee, Rampore, Shahabad, Hazareebagh, Singbhoom, Gowalparah, Kamroop, and Darjeeling prisons, denominated the clothing allowed as being "good," "excellent," "capital," or "suited to the climate." The officers in medical charge of the Backergunge, Bograh, Hooghly, Jessore, Maldah, Moorshedabad, Pubna, Sylhet, Tyrhoot, Lohardugga, Maunbhoom, Sumbhulpore, Durrung, Luckimpore, Akyab, Ramree, Sandoway, Cachar, and the Cossiah Hill prisons confine their observations merely to a statement of the quantity of clothing allowed, and the seasons, when it is given out, without giving any opinion as to its suitability, sufficiency, or non-sufficiency.

208. STATEMENT B.—*Prison Clothing in Madras.*

Seasons.	Articles of Clothing.	Colour and Marks.	Dates when issued.
During hot, rainy, and cold seasons.	Day-dress: 2 Cotton Cloths and 1 Cumbly Hood	Red, brown, or black.	Annually, or when required.
	Bedding: 1 Cumbly (blanket) 1 Mat and 1 Day Cloth.		
	Hospital: Extra Cots and Cumblies supplied for bad cases.		

In Madras, "the clothing of all prisoners, convicted or held to security, shall consist of two cloths in the year, one cumbly and one cumbly hood, besides one mat to sleep on; the cumblies will, if of good quality, last several years, and, in no case, are they to be renewed oftener than once in the year. 2. The cloth shall ordinarily measure three yards in length for males and six for females; it shall be woven with distinctive marks or stripes in the web, and in quality shall be ordinarily that of the twelve or fourteen punjum of Northern Circars (weighing 12lbs. or 14lbs. to the piece of 72 cubits). Where the custom of the country induces the use of the smaller cloths, as on the western coast, these shall be furnished in lieu of the six cubit cloths; in no case is any prisoner to be allowed to tear his cloth or to convert it into the shape of any other garment. 3. Strips of cloth (langooties) will be furnished, either from the old clothing, or of cloth purposely woven with a distinctive mark. 4. Officers in charge of jails can either serve

out the cloths on the 1st July, or, one at a time, on the 1st January and 1st July, as they may find most conducive to cleanliness. In all cases, the old prison clothing must be returned, washed and put in store, for issue to prisoners for broken periods. The prison clothing is, on no account, to be given to prisoners released (for whom due provision is made by Section 32, Regulation X. of 1816), nor is the *old* cloth to be sold, unless in form of rags, torn small for the paper factory. 5. The cumbly, if issued annually, should be of a quality that may be purchased for about five annas, or ten annas if issued biennially. 6. The cumbly hood may be formed from a piece of cumbly sufficiently long to allow of its being doubled on the top and hung over the loins, to protect the person from both sun and rain, and the head from dirt when carrying earth. 7. The cumbly, mat and second cloth, when the two are served out together, are to be left in the ward, suspended from a peg; the hood is to be worn at work. 8. Whenever practicable all jail clothing should bear a well-defined, broad, distinctive mark; it remains the property of Government, and any misappropriation of it is to be treated as a criminal offence. 9. No criminal prisoner is to be allowed to retain any private property; any found on him, on admission, will be taken charge of, and any subsequently introduced will be confiscated."[1]

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[1] *Report of the Inspector of Prisons, Fort Saint George, for* 1856 *and* 1857.

209. STATEMENT C.—*Prison Clothing in Bombay.*

Season.	Articles of Clothing.	Colour and Marks.	Date of Issue.	REMARKS.
During the hot, rainy, and cold seasons.	Day-dress { Breeches ..... Jackets ..... Caps	White, with red or black.	The first issue in the month of May, and the second in November.	The yearly allowance to each prisoner is— 2 Breeches, 2 Jackets, 2 Caps, 2 Kumblies.
	Bedding . Kumblies	Black, with red or white.		
	Hospital . { As the Civil Surgeon directs.			

I am indebted to Mr. Albemarle Bettington, Inspector-General of Prisons in Bombay, for this statement, from which, it will be observed, that each prisoner in the Western Presidency is allowed two breeches, two jackets and two caps of a white colour with red or black marks, and two kumblies of a black colour with red or white marks. The first issue of one of each of these articles takes place in May; the second in November. The hospital clothing is only modified from the above at the express direction of the Civil Surgeon. Nearly all the criminals, sentenced to hard labour, in this part of the country, are, from the absence of industrial or central prisons, employed at out-door labour. As changes of costume are usually not available, it stands to reason that the prisoners, so occupied, must sustain great injury, during the rainy season, from having to sleep on the ground in wet clothes.

210. STATEMENT D.—*Prison Clothing in the North-West Provinces.*

Seasons.	Articles of Clothing.	Colour and Marks.	Dates when issued.
During hot season and rains.	Day-dress: 1 Dosootie Dhootie; 1 Ungocha; 1 Dosootie Mirzaie; 1 Cap.	Garroo.	15th March.
	Bedding: 1 Tat Pattee, 6 feet by 2 feet; 1 Blanket.		
	Hospital: None extra, unless directed by the Medical Officer.		
During the cold season.	Day-dress: The above Dosootie Mirzaie replaced by one made of blanket stuff, otherwise no change.		20th September.
	Bedding: As above, with one additional blanket. Total, 2.		
	Hospital: None extra, unless ordered by the Medical Officer.		

For the materials composing this statement, I am indebted to Mr. Cuthbert Thornhill, late Inspector-General of Prisons, North-West Provinces; to Dr. G. Playfair, Civil Surgeon of Agra, and late Officiating Superintendent of the Agra Central Prison; to Dr. J. C. Bow, Superintendent of the Allahabad Central Prison; and to Dr. Corbyn, Superintendent of the Central Prison at Bareilly. It appears that, from the 15th of March to the 19th of September, or during the hot and rainy seasons, each criminal, in the North-West Provinces, is provided with one dhootie, one

ungocha, one mirzaie (jacket), one cap, and one blanket. From the 20th of September to the 14th of March, the allowance consists of two blankets instead of one, a jacket made of woollen material in lieu of that made of cotton, and the same quantity of the other articles, as already noted. Bedding, for the hospital, is only allowed when deemed necessary by the Medical Officer. The sleeping places are raised from the ground, well leeped, and, in the cold season, supplied with a layer of pyal, or rice straw. In the Agra Central Prison, Dr. Playfair states that the blankets used are of a black or grey colour, and that the jackets are bound with cloth of a distinctive colour. The colour of the dresses is somewhat suited to the darkness of the crime of which the criminal has been found guilty. Thus life prisoners are clothed in yellow; those convicted of dacoity, murder and highway robbery in black; those convicted of theft in blue; those convicted of perjury and false witnessing in red; those convicted of having entered into affrays regarding boundary disputes in a light brick colour. Dr. Bow states that a similar plan is adopted in the Allahabad Central Prison.

211. STATEMENT E.—*Prison Clothing in the Punjab.*

Seasons.	Articles of Clothing.	Colour and Marks.	Dates when issued.
During hot and rainy seasons.	Day-dress { 1 Dhotie..... 1 Dosootie Coat..... 1 Woollen Cap ..... }	Orange yellow, with stripe of a different colour.	1st March in plain stations. 1st April in hill stations.
	Bedding . { 1 Mat. 1 Blanket. }		
	Hospital . { It appears that there is nothing extra. }		
During the cold season.	Day-dress { Dosootie Coat replaced by a woollen one, the remainder as above. }		1st Oct. in plain stations. 1st Sept. in hill stations.
	Bedding . { As above, with one additional blanket. }		
	Hospital . { Nothing extra, as it would appear. }		

In the Punjab, "every prisoner is to wear a suit of jail clothing, according to the one uniform pattern, supplied for general adoption; this consists of a woollen cap, a coat made of dosootie, and a waist-cloth, both died orange yellow; he has also a blanket and sleeping-mat for the night. 57. In the cold weather the coat is replaced by a woollen one, and an additional blanket is served out. 58. Great care should be taken, that the winter clothing and blanket be available, and delivered to all the prisoners, by the 1st of October, and in the hill stations by the 1st of September. 59. The summer clothing should be issued by the 1st of March, or April, according to the locality of the station, and care be taken for the prompt and careful repair of the woollen clothing and winter blanket, which are to be taken

back into store, when the summer clothing is issued. 60. The prison dress is ordered to be worn by *all* sentenced criminal prisoners, without exception, and no one should be allowed to retain any portion of his own private clothing in jail. 61. The prisoner's clothing should be all made in jail, and the one uniform pattern preserved, by introducing a *cross* stripe of a different colour, so as to distinguish it as of jail manufacture, from any ordinarily sold in the bazar.—By adopting a particular and distinctive jail pattern, a great check against peculation is established. 62. No pockets or opening in the lining should be allowed to be made in any part of the coats, as is constantly done for the sake of concealing tobacco, money, or food. 63. The blanket is only to be worn in going to, and returning from work, or while being inspected. When the prisoners are at labour, the blanket is not to be worn at any time except during very cold or rainy weather, and on no account is it to be used for carrying grain, atta, or other substances in, or to be hoisted up and placed on the head. 64. The old worn-out blankets and clothing should be made up into circular pads like a porter's knot, to be used by the prisoners who are employed in carrying baskets of earth, grain, or vegetables, &c. 65. The additional blanket allowed during the cold season should have a red stamp, or other distinguishing mark, by which it can be easily recognized, and this blanket being given only for use at night, should never be taken out of the barracks when the prisoners go to work."[1]

[1] Hathaway's *Jail Manual.*

212. It will be noted from the foregoing authentic details, that, in Bengal and Madras, there is no distinguishing prison costume, whilst in Bombay, North-West Provinces, and Punjab, prison uniform has already been practically adopted. The day-dress, in the three latter, appears to be amply sufficient, in the cold season, when efficient clothing is most urgently required, but, in the two former, and more particularly in Bengal, the scanty allowance is totally inadequate to shield the healthy,—not to mention the numerous unhealthy,—from violent and sudden daily ranges of temperature. It is, however, most gratifying to find that Dr. Mouat has resolved upon adopting the Agra plan of clothing, throughout the prisons of Lower Bengal, as soon as it can be accomplished. The institution of a regular and uniform prison costume in Madras will, it is earnestly hoped, soon become an established fact. With regard to the custom, which prevails in many prisons, of allowing the prisoners, when at work, to wear an unwieldy blanket, the sooner it is abolished the better. The one blanket allowed, during the hot, and the two blankets, during the cold season, in Upper India, should be considered and used as barrack or cell bedding only. If the day-dress should ever happen to afford insufficient protection, during the cold weather, it would be better to add to, or improve the quality of this, than to employ any portion of that which should only be used at nights, to make up for its defects.

213. There is one grand defect of omission, in all the systems of clothing, which requires prominent men-

tion. I allude to the absence of a definite scale of hospital bedding. It is perfectly true that the apportionment of this is reported to rest with the medical officer. It is just as correct that I have been informed, —and my experience is in harmony with the information, that "none in store" is so frequently the reply to the medical officer's requisitions for hospital bedding, that the exercise of the discretion vested in that officer is divested of much of its utility. When this reply is tendered, the Surgeon has no alternative but to do the best he can under such untoward circumstances,—to treat formidable attacks of malarious fever, dysentery, pneumonia, pleuritis, cardiac or renal dropsy, without any material assistance from efficient bedding, further than from that which is allowed for prisoners, when understood to be in health, and inhabiting their barracks and cells. That such a system as this is radically wrong is evident enough. It explains in part the reason why success in the treatment of the diseases of Indian criminals is comparatively so small.

214. As cots are only supplied in exceptional and emergent cases, and in, I fear, very exceptional situations, it would be highly advisable to have a certain percentage of blankets available, so that two could be supplied, during the rainy, and three, during the cold season, to all patients suffering from febrile, visceral, and other diseases of a severe nature. As the hospital bedding should be washed twice a week, for purposes of cleanliness, and deodorization, or disinfection, this circumstance would have to be kept in view, whilst

calculating, on a large scale, the percentage of blankets that would have to be kept in readiness for hospital use in any given jail, or series of jails. It is difficult to over-estimate the importance of an adequate supply of bedding to the unhappy inmates of Jail Hospitals. For experience teaches, that it constitutes an essential element in the successful management of febrile, splenic, hepatic, intestinal, and thoracic diseases, all of which, directly or indirectly, separately or more or less in combination, furnish liberal contributions to swell the proportions of the *Indian Jail Bills of Sickness and Mortality.*

CHAPTER XIII.

PRISON DISCIPLINE.

215. Before discussing a scheme of prison discipline suited to the treatment of Indian criminals, it may be useful to detail the different "modes of discipline that at present make up the science of what is termed 'penology,'" so that the advantages and disadvantages of each may be laid as clearly as possible before the reader.

1st. *Classification.*—This is the system, which is contemplated by the law to hold good in this country, but, as neither the prisons, nor the subordinate executive establishments are adapted for its introduction, it exists chiefly in the pages of Regulations. The objects of classification are to prevent the further demoralization of the inexperienced, by the practised adepts in crime, by dividing the convicts into classes according to the nature of the offences of which they stand convicted. The arguments advanced in favour of this system by its advocates have been briefly stated by Mr. Livingstone, the American jurisprudist. He writes:—"That as a place of punishment, a prison would soon lose its terrors, if its depraved inmates were suffered to

enjoy the society within it, which they had always preferred when at large; and that, instead of a place of reformation, the prison would become the best institution that could be devised for instruction in all the mysteries of vice and crime, if the professors of guilt were suffered to make disciples of those who may be comparatively ignorant. To remedy this evil, therefore, we must resort to classification: first, the young must be separated from the old; then we must make a division between the novice and practised offenders. Further subdivisions, however, were found indispensable, in proportion as it was discovered that in each of these classes, there would be found individuals of different degrees of depravity, and, of course, not only the corrupters, but those ready to receive their lessons. Accordingly, classes were multiplied, until in some prisons in England we find them amounting to fifteen or more."

216. The great defects of this method are that it leaves the members of the various classes in company to relate to each other the secrets of their illegal avocations, to concoct and mature plans for future infractions of the law; so that, after the expiration of their sentences, each constituent of the respective classes is ushered forth into the world probably a more skilful criminal than he was before he was immured in prison. "In the consideration of this question," says Mr. Livingstone, "these evident truths seem not to have had their proper force: first, that moral guilt is not the immediate subject of human observation; nor, if discovered, is it capable of being so nicely appreciated as to enable us to

assign to each individual, who may be infected with it, his comparative place in the scale; and if it could be discovered, it would appear that no two individuals could be found contaminated in the same degree: secondly, that if these difficulties could be surmounted, and a class formed of individuals who had advanced exactly to the same point, not only of offence, but of moral depravity, still their association would produce a further progress in both." Unfortunately, as the Rev. Joseph Kingsmill, the able Chaplain of Pentonville Prison, observes, "Classification of prisoners allows no approach, seemingly, towards separating the very bad from the better sort. They are continually changing places; those in for felony at one sessions being in for larceny or assault the next, and *vice versâ*." In reference to the introduction of this system into English prisons, a quarter of a century ago, the Surveyor-General of Prisons writes,—"It was most unfortunate for all the interests concerned, that a step was taken in the wrong direction; for it was considered that if prisoners could be classified, everything would be effected that could be desired in the way of punishment and reformation. . . . Accordingly vast sums of money were expended in the erection of prisons calculated to facilitate the classification of prisoners. New prisons for carrying out this discipline were constructed on a radiating principle—a central tower was supposed to contain an Argus (or point of universal inspection), and from four to six or eight detached blocks of cells radiated (spoke fashion) from it—the intervals between the buildings forming the

exercising yards for the different classes. Each of the detached blocks contained a certain number of small cells (generally eight feet by five), and there were day-rooms in them, where the prisoners of the class would sit over the fire, and while away the time by instructing each other in the mysteries of their respective avocations; for it was not intended by this mode of discipline to check the recognized right of each class to amuse themselves as they pleased. In fact, had it been an object to make provision for compulsory education in crime, no better plan could have been devised." If sound punitive and reformatory treatment is to be steadily held in view, in the future construction of Indian prisons, arrangements for the classification of prisoners *only* would not answer the purposes contemplated.

217.—2nd. *Silent Associated System.*—When the sanguine expectations anticipated from the introduction of the system of confining the prisoners, according to the nature of the crimes of which they had been charged or found guilty, were disappointed, it was thought that the classification of criminals would be perfected, if intercommunication between the constituents of each class were altogether interdicted. But the advocates of this system do not insist upon the necessity of having the prisoners rigidly arranged in classes. "The usual practice is to associate such classes as can be properly brought together, in order to economize superintendence; and hence its name of the Silent Associated System, in contradistinction to

the Classified System, under which intercommunication is permitted." It was introduced into the Coldbath Fields Prison on the 29th of December, 1834. "On this day," says Captain Chesterton, in his Autobiography, "the number of 914 prisoners were suddenly apprised that all intercommunication by word, gesture, or sign was prohibited; and without any approach to overt opposition, the silent system then became the rule of the prison. . . . Those who had watched and deplored the former system," adds the late governor, "could not but regard the change with heartfelt satisfaction. There was now a real protection to morals, and it no longer became the reproach of authority, that the comparatively innocent were consigned to certain demoralization and ruin. For eighteen years has this system been maintained in this prison with unswerving strictness." He continues,—"I unhesitatingly avow my conviction that the silent system, properly administered, is calculated to effect as much as, by any penal process, we can hope to realize."[1]

218. There are, however, powerful objections to the infliction of this description of discipline, to a summary detail of which I now proceed.

(i.) It professes to prevent all communion between the prisoners, and, for the attainment of this object, employs a most expensive establishment; yet the object in view is never accomplished, as is conclusively proved by the great number of punishments that have to be

[1] *Great World of London.*

inflicted for infractions of prison discipline. In the *Second Report* of the Home Inspectors, the number of punishments that had to be enforced, in three London prisons, during one year, was—

	Punishments.	Prisoners.
In Brixton House of Correction	1,171.....	3,285
In Westminster Bridewell	4,848.....	5,524
In Coldbath Fields House of Correction...	13,812.....	9,750

In their *Third Report* the following results are given referring to two prisons, where the Silent Associated System was carried out, during one year (1837)—

	Punishments.	Prisoners.
In Coldbath Fields House of Correction...	13,812.....	9,750
In Wakefield House of Correction	12,445.....	3,438
Total.....	26,257.....	13,188
In all the Prisons of England and Wales .	54,825.....	109,495

And in another portion of the same report a more detailed train of similar facts is revealed.

—	Punishments.		Prisoners.	
	Males.	Females.	Males.	Females.
1. Coldbath Fields House of Correction	11,428	2,384	6,625	3,125
2. Wakefield ditto.....	10,822	1,623	2,860	578
3. Salford ditto	3,792	389	5,447	2,310
4. Knutsford ditto.....	1,265	85	1,168	281
5. Stafford Gaol and ditto...	188	44	2,046	231
6. Westminster Bridewell...	3,532	1,316	3,085	2,439
7. Brixton House of Correction	898	273	2,167	1,118
Total.....	31,925	6,114	23,398	10,082

Total Punishments, 38,039. | Total No. of Prisoners, 33,480.

"The comment," says the Home Inspectors, "which the foregoing statement presents upon the inherent imperfection of the *Silent* System needs no enlargement. We leave it to make that impression which its own weight can scarcely fail to produce."

(ii.) It is exceedingly expensive. "At Coldbath Fields Prison, no less than 272 persons (54 warders + 218 prisoners, appointed to act as monitors over their fellow criminals) were employed to superintend 682 inmates, which is in the ratio of 10 officers to every 25 prisoners. Nevertheless, even this large body of overseers was found insufficient to prevent all communication among the criminals,—the rule of silence being repeatedly infracted, and the prison punishments increasing considerably after the silent system had been introduced."[1]

(iii.) It is contended that, owing to the continued fretting and irritation of mind inevitably produced by inflicting a discipline which, in its integrity, is equivalent to excising men's tongues, moral amendment is rendered an impossibility. The bustle and activity of a manufactory (and many a prison upon the silent system is nothing more); the irritation of mind produced by the infliction or dread of punishment; the constant watch to which all the convict's looks and movements are subjected; the hurry and agitation of mind which the observance of numerous and perplexing regulations are perfectly keeping up; the exposure to recognition

[1] *Great World of London.*

on the part of his guilty associates; all these are calculated to banish reflection, prevent self-communion, and shut out religious instruction, or speedily to efface any good impression that may have been produced."[1]

(iv.) It is objected that the Silent System rests too much discretionary power in the Governor and his subordinate officers, in consequence of which punishments are fluctuating quantities; and uniformity is impossible.

(v.) It cannot be successfully enforced in the case of female prisoners.

(vi.) It cannot be reduced to uniformity, because "the discipline is of a nature which must inevitably take its tone from the moral character, and even from the physical qualifications, of the individuals by whom it is administered."

(vii.) It cannot with justice be applied to the untried; because it would be the height of cruelty to subject an innocent man (and many of the untried are innocent; moreover, all of this class must be so viewed until their guilt is established) to such a very unnatural mode of punitive treatment.

(viii.) But the most powerful objection to the Silent System is that it is as inhumane and cruel as it is thoroughly impracticable. The Chaplain to the Bedford House of Correction stated to the Home Inspectors that "among the convicted prisoners with whom the Silent System is enforced, there is contamination.

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[1] *Third Report of the Home Inspectors.*

Prisoners, notwithstanding the strictest attempts to enforce silence, have frequent opportunities of conversing. I have," he says, "seen them converse while passing in file to and from the chapel, and I have seen the cleaners talking under the doors to the various classes. In the infirmary the prisoners are always aware of all that passes both in the prison and amongst their friends out of prison." The governor of the same prison states, "that although the prisoners are kept in separate cells, except when on the wheel, and when from the crowded numbers three and four sleep in one cell or room, yet the evils of contamination prevail to a great extent. The prisoners, notwithstanding the discipline, can and do talk. I find," he says, "that they do it frequently; they talk from cell to cell through the ventilators and partitions; they talk on the wheel; they talk while walking the ring when on relief; and they talk while they wash the yards. They sometimes make signs at chapel. They are aware of newcomers, and of the discharge of old prisoners, and even of the day when such discharges are to take place, and they generally learn what goes forward in the prison."

219. To insist upon the prohibition of all intercommunion by compelling men working side by side neither to make their thoughts known to each other, "by word of mouth, look, sign or gesture," is a piece of refined torture, and as unnatural as it would be to command a body of men not to think, coin an idea, or exercise the faculty of reason. The sheer impossibility

of forcing men so circumstanced to render the wondrous gift of speech, which next to reason may be considered as the most distinguished characteristic of Man, a nullity, notwithstanding the most costly supervision, together with the fact, that so far from having any tendency to improve the moral principles, this system encourages the practice of hypocrisy and deception, should be sufficiently condemnatory of it, to prevent its adoption in any Indian prison—even if any hope existed of the prison authorities being able, with a native subordinate executive, to carry it into effect. "For surely to place a number of social beings in association, and then not only to interdict all intercourse between them, but to punish such as yield to that powerful human impulse, the desire of communing with those with whom we are in association, is an act of refined tyranny, that is at once unjust and impossible of being carried out."[1]

220.—3rd. *Mark System.*—"As this system, so far as our knowledge goes, forms part of the discipline at no penal establishment in this country at present, it requires but little explanation here. The great feature of the mark system, according to Mr. Hepworth Dixon, who styles it 'the most comprehensive and philosophical of all schemes of criminal treatment in this country,' is that it substitutes labour sentences for time sentences. Instead of condemning a man to fourteen years' imprisonment, Captain Maconochie, the author of this

[1] *Great World of London.*

peculiar mode of discipline, would have him sentenced to perform a certain quantity of labour—the labour being represented by 'marks' instead of money—whence the name of the system. The whole of this labour, we are told, the convict would be bound to perform before he could regain his freedom, whether he chose to occupy one year, or twenty years about it. The advantages of this mode of prison discipline, its advocates aver, are, that it places the criminal's fate, to some extent, in his own power. Labour punishment, they say, gives the convict a feeling of personal responsibility, which the present mode of discipline robs him of. The man serving a fixed period has no object but to kill time. An absolute disregard of the value of time is thus begotten in the mind of the convict—time becoming associated with the idea of suffering and restraint. The time sentence puts the offender under restraint for a term, but does not force him to do anything to make any active reparation to society for the crime, and it takes away all stimulus to exertion on the part of the criminal, who knows that, idle or industrious, dissolute or orderly, he must still serve out an inexorable number of weeks and years. The labour sentence, on the other hand, induces a habit of hard work, and the habit which is thus made to earn for the man his liberty will afterwards become the means of preserving it. As yet the system has been tried only in Norfolk Island—where, it is alleged, no conceivable system would or could work well—amongst transported convicts, the most self-abandoned of human beings, perhaps, on the earth's

surface. But, even there, adds Mr. Dixon, 'it did not fail.'"[1]

221.—4th. *Solitary System.*—In the Third Report of the Home Inspectors, it is stated, that "solitary confinement is universally and correctly understood to be a condition of as unmitigated, uninterrupted seclusion from society as is practicable; often in dark and gloomy cells of small dimensions, ill ventilated, often damp, and destitute of those accommodations necessary for the prisoner's convenience, his diet being generally restricted to bread and water. . . . The object of solitary confinement is solely to punish the prisoner, principally for violating the prison regulations, and that too by means always harsh and severe, and often vexatious and exasperating; and this not to effect a lasting moral benefit for himself, but to uphold the Prison Discipline at the price of severe bodily and mental suffering." Again—"Solitary confinement is the seclusion of the prisoner as far as practicable from all human society, attended with privations both bodily and mental, which are intended merely to inflict punishment, to subdue obstinacy of temper, to uphold authority by the operation of pain and fear: it employs harsh measures to effect a temporary purpose." Colonel Jebb states, that this "mode of discipline is so severe that it cannot be legally enforced for more than a month at a time, nor for more than three months in any one year."

222.—5th. *Separate System.*—This system of penal discipline was originally advocated by Sir William

[1] *Op. cit.*

Blackstone, Bishop Butler, Rev. Samuel Denne, Jonas Hanway, Dr. Paley, and the celebrated prison reformer Mr. Howard; and though it was made the subject of an Act of Parliament in 1778, it was not put into practice till several years afterwards, and even then the experiment at Gloucester "was not prosecuted so as to lead to any definite results." It was first tried in the county jail at Gloucester in 1790, and continued to be enforced by Mr. Howard, acting under the auspices of Sir George Onesephorus Paul, and other magistrates, during a period of seventeen years. Cells were constructed in which the prisoners were confined apart by night and day, from the period of admission to that of discharge. Short-termed criminals were not allowed, but those sentenced to long periods, were granted, employment. Moral and religious instruction was afforded in the cells, and also in the chapel. Sir G. O. Paul, in his evidence before the "Select Committee on Jails," stated,—"That the system of solitary confinement had succeeded beyond his most sanguine hopes, or the imagination of its projectors; that the moral character of the prisoners in general was greatly improved by this discipline; that it could reform even the most hardened criminal; and that for seventeen years, during his supervision, few or none had been subjected to a second imprisonment." It appears that the system was ultimately abandoned to make room for additional prisoners occasioned by the increase of the population. Mr. Whitworth Russell and Mr. William Crawford stated, in their Third Report (1838), that the good effects of

modified solitary confinement had been proved in the House of Correction at Tynemouth. Twenty separate cells had been used in this prison for 40 years with a view to effect the complete isolation of the most intractable and incorrigible criminals. A few cells had also been used for some time in the Shrewsbury County Jail.

223. "About three years after the completion of the Gloucester Penitentiary," Jeremy Bentham's Panopticon was taken into consideration, and the 34th Geo. III. cap. 84, was intended to conform to his proposal, which was totally different in its aims and objects to the 19th Geo. III. cap. 74, which was enacted to legalize the Gloucester system of separate confinement. "It was directed in the 19th Geo. III. that every prisoner in the penitentiary should sleep in a separate cell; but Mr. Bentham was empowered to place as many or as few as he thought proper in the same cell; and we find in his examination before a Committee of the House of Commons in 1811, that it was his intention to have placed, generally, no less than six persons in each cell—this was the proposed average number: 'but,' he added, 'that would not preclude me from putting seven in one, or eight in another.' Again,—'For aught I know, some work might be carried on during the night, as in manufactories: I reserve to myself full liberty to take all those advantages.' Under the 19th Geo. III., the prisoners were to be confined to a fixed dietary of coarse food; whereas Mr. Bentham meant to allow them to spend a part of their earnings in articles to be purchased for their own use, and he saw no objection to

the 'governor being permitted to deal with them at his own prices,' because he was to keep regular accounts of such dealings. The 19th Geo. III. directed that two of the Committee, who were to superintend the penetentiary, should visit it once a fortnight, and should see every prisoner confined there; and this Act also provided an Inspector to visit the prison once a quarter. Mr. Bentham, on the other hand, declared that sufficient protection would be insured to the prisoners by the admission of the public to a room in the centre of the building, from which they could be seen in their cells: that inspection being rendered possible even at night, by means of reflectors to be placed in the room to which visitors were to be admitted. The contrivance, however, by which oral intercourse was to be carried on between a visitor and any convict with whom he chose to communicate, was clearly proved to be utterly inefficient." . . . "It must moreover be borne in mind," say the Home Inspectors, "that the institution contemplated by Mr. Bentham was merely a great manufactory, without regard being had either to the penal or moral objects of a prison."

224. The Committee of the House of Commons, supported by the evidence of Sir G. O. Paul and other magistrates, confirmed the policy which the 19th Geo. III. was designed to introduce; and they concluded, "That the system of penitentiary imprisonment, upon the general principles of the 19th Geo. III. cap. 74, was calculated to reform offenders and ought to be pursued; but that, instead of the National Peniten-

tiary-house (Bentham's Panopticon) which had been proposed, a separate prison of that description should be erected, in the first instance, for the counties of London and Middlesex, and that measures should be taken for carrying on the penitentiary system as soon as might be practicable, in different parts of the country."[1]

225. From the crowded state of Newgate the immediate erection of a penitentiary for London and Middlesex was urged by the Committee. Accordingly, in 1812, "the Act 52nd Geo. III. cap. 44, framed in conformity with the recommendation of the Committee, was passed." The penitentiary was intended for the accommodation of 300 male and 300 female prisoners convicted in London and Middlesex; "but a clause was inserted in the Act, in its passage through the House of Commons, empowering the Crown to send convicts of the same description there from every part of England and Wales, until provision should be made for confining such offenders in penitentiary-houses elsewhere." The design was ultimately enlarged, and the Millbank Penitentiary was, in compliance with subsequent Acts of the House of Commons, arranged so as to afford accommodation for 800 male and 400 female prisoners—to answer the double purpose of introducing the new system of discipline on a large scale, and of relieving the other prisons in England and Wales of their excess of criminals. It was commenced in 1813

[1] *Op. cit.*

and finished in 1821. It now affords room for 1,300 criminals.

226. About 1824 two oblong wings were added to the Glasgow Bridewell, each containing four stories, and the whole 160 cells. Each cell was 9 feet by 7, and 10 feet high, and completely built of stone in a substantial manner. The cells were lighted by windows placed near the ceiling; the door was placed in one corner of the cell, on the side opposite the window; and near the ceiling, on the same side with the door, an opening communicating with a pipe was placed for ventilatory purposes. The general rule was to confine each prisoner in a separate cell, there to remain day and night, totally secluded from his fellow-prisoners. He was supplied with work during the day, and at night a hammock served as his bed. Thus, with occasional exceptions, rendered necessary by the want of sufficient accommodation, and a sufficient number of paid assistants, the system of separate confinement, combined with proper employment, was carried into effect. "Upon the whole," say the Home Inspectors, "the experiment made with respect to the operation and effects of the Separate System in the Glasgow Bridewell (in which, however, it must be borne in mind that there are imperfections), has been very successful, and offers great encouragement for the further development of its principles, and the removal of defects which impede its operation and impair its efficacy."

227. The theory and practical application of the Separate System, as has been already stated, originated

in England. But the Americans were not long in imitating the theories, and following in the footsteps, of the mother country. Accordingly they set about the adoption of the new discipline in a very determined and energetic manner, and not infrequently, at first, as will be seen hereafter, in a mistaken direction. The "Philadelphia Society for assisting distressed Prisoners" (1776) was established with a view to mitigate the severity of the punishments to which criminals were then subjected—penal inflictions which in those days were altogether revolting to public feeling, disproportionate to the crimes for which they were imposed, and as degrading, cruel, and inhuman as those which, at the present day, characterize the horrible dungeons of Naples and Venice, Austria and Rome. In 1786, after the conclusion of peace, the Legislature of Pennsylvania abolished capital punishment, except for capital crimes, in conformity with the recommendations of this Society, but instead of adopting its views in regard to the advisability of instituting solitary (separate) confinement, strange to say, the Act of 1786 enacted that certain crimes, which had hitherto been capitally punished, should thenceforth be "punished with severe labour, imposed in a public and disgraceful manner." This mistake was soon made manifest by increased "debasement, corruption, and the repetition of crime;" so much so, that the Act had to be repealed in 1790, in favour of solitary (separate) confinement. With a view to carry out the new enactment, which replaced the first Act, sixteen cells for male, and fourteen for female

convicts, were constructed in the Walnut Street Prison, for the avowed purpose of enforcing the "addition of unremitted solitude to laborious employment, so far as it could be effected." The cells were 6 feet by 8, and 8 feet high; "they were dark, and badly ventilated, and on the floor of each cell was an iron staple—a circumstance which denotes that they were used for the purposes of punishment, rather than as places of ordinary discipline and industrious occupation." Precautions were not taken to prevent communion between the inmates of adjacent cells. There was not even rigorous seclusion between the inmates of these cells, and the great body of the criminals, who lived and laboured in association in other parts of the prison. Still, the system, on account of its novelty, I suppose, gained a temporary popularity, though it was but a very feeble imitation of what Howard and his disciples considered the Separate System to be in all its integrity —till all its attendant evils became evident from increased moral depravity and corruption, and their constant sequences, repetitions of crime.

228. The Philadelphia Society, stimulated by the success which had already attended the Separate System in England, and by the favourable reports of several Committees of the House of Commons, &c., persevered to establish this mode of discipline in Pennsylvania; "and it was mainly owing to their exertions that the Legislature were induced, in 1818, to erect a prison at Pittsburg, professedly on this plan, for the western division of the State." But here again our

Transatlantic brethren committed the lamentable mistake of introducing the Solitary System *unmitigated with employment;* of making the cells *inconveniently small;* and of not effecting the *complete seclusion* of every prisoner from his neighbour. Moral depravation and advancement in the art and mystery of crime were the inevitable consequences of depriving the prisoners of any employment whatsoever, whilst the cells were not so constructed as to prevent free communication; and the carrying on of a furtive and demoralizing intercourse. It will be seen that this was only the solitary system in disguise, and experience had proved long before the Pittsburg Prison was constructed, that the successful application of the Solitary System, for lengthened periods, is not only impracticable, but cruel and inhuman to a degree.

229. Another experiment was made, in 1822, in the State of Virginia, under the following circumstances, described by the Home Inspectors. "The solitary cells are arranged in the basement story, and the side of the passage leading to them towards the interior yard consists of a solid brick wall. In entering the solitary cells through this passage from the yard, it is necessary to use a candle or torch. In the cells arranged on the side of this dark passage, the convicts, who are generally condemned for the first six months to solitary confinement, receive this part of their punishment. It is very severe; for the cells are dark, and damp, and cheerless. A small sash placed above the prisoner's head, admits a faint light; the water

stands in drops on the wall in damp weather, and no provision is made for warming the cells at any season of the year. An instance has occurred in which a prisoner's feet were frozen while enduring the term of solitary confinement in one of the cells. Some of the cells in this prison, designed for solitary confinement, have no window or orifice for the admission of light, and the only ventilation is through a small orifice in the door, opening into the dark passage." Failure was the birthright of this ill-judged experiment.

230. But what will my readers think of the following arrangements made, about this time, in the State of Maine, for the purpose of testing the merits of the Separate System! "The cells," say the Home Inspectors, "are pits, entered from the top, with a small ladder, through an orifice about two feet square; the ladder is removed when the convicts are in the cells. The orifice is secured with an iron grate used as a trap-door. The only other orifice in the cells are, one in the bottom about an inch and a half in diameter, to admit warm air from underneath, which is heated by a furnace; and another in the side of the cell about one and a half by eight inches. This orifice has an angle in the wall, to prevent the convict from seeing any person without. The cells are 8 feet 9 inches long, 4 feet 6 inches wide and 9 feet 8 inches high. Many of the convicts sent to the State Prison were, at the time of their arrival there, afflicted with diseases, and some with incurable diseases."

231. The culminating shock to the popularity of the Separate System, as illustrated in the above examples (or, which is nearer to the truth, to the disgusting and protracted Solitary System in disguise) was given by the inhuman Auburn experiment, directed by an Act of the Legislature of the New York State, in April 1821. By this Act, 80 of the most heinous offenders, in the Auburn Prison, were ordered to be immured in cells measuring seven feet by three and a half and seven feet high. The openings in each cell consisted of a ventilator, and an iron grate measuring twenty inches by eighteen, in the upper end of the door, through which all light, heat, and air which the prisoner had was admitted. "The ventilator, which was about three inches in diameter, extended from the back of the cell to the roof of the building. It will be perceived how very inadequate the ventilator must have been, from the fact just stated, that the opening in the upper part of the door was the only aperture through which any fresh air could find admission; and that, consequently, a stagnation of air in the lower part of the cell must have ensued, which would be exceedingly prejudicial to the health of the prisoner." No exercise in the open air was permitted. All instruction, moral, religious, or intellectual, was rigidly withheld. In ten months the result of this experiment was such as to ever afterwards threaten the abolition of the Separate System in the United States. Several of the unhappy convicts became insane, the health of the majority was seriously impaired, and some escaped narrowly with their lives;

which could not have been very enjoyable after such a menagerial ordeal.

232. The effect of the above trials on the public mind was most marked. The applicability of the Separate System was represented as impossible. Its advocates, including in their ranks some of the wisest and most philanthropic men in the Union, sank below zero in public estimation. Convinced, however, that a relapse to the old method of promiscuous association, or association modified and tempered by classification, would be a step in the wrong direction, the Legislature of New York resolved to put to the test the efficacy of the Silent System, which had been enforced for many years at the *Maison de Force*, at Ghent, in which the prisoners were confined in separate cells at night, and compelled to work together in solemn silence during the day, under the surveillance of an efficient staff of officers. Accordingly, in 1823, Auburn, which had just previously been the site of one of the most disastrous experiments that ever was recorded in the annals of the prison management of any free country, was altered for the purpose of having introduced into it the Silent System, which, as has been already stated, has many insuperable drawbacks.

233. But, notwithstanding the serious blow which had been levelled at the Separate System, the people of Philadelphia persevered. They saw that the experiments, which had turned out so disastrously, had failed because the mode of procedure was very similar to the brutal solitary confinement of the Middle Ages, or of

the vilest days of the Inquisition. They thought that the system "had been enforced in a way which was calculated to frustrate its design and to ensure its failure; and they felt that it was due to themselves, to the welfare of the prisoner, and to the interests of the community, that a trial of the *Separate* System should be fairly made." And to give the *Separate* System, as contradistinguished from the *Solitary* System, a complete trial, the erection of one of the finest, most substantial, and extensive prisons that was ever constructed, the Eastern Penitentiary of Philadelphia, was resolved upon, in 1821; but, owing to differences of opinion "respecting the discipline which it would be advisable to adopt, it was not proceeded with until five or six years afterwards." It was ready for the reception of prisoners, in July 1829, and the first convict was admitted on the 25th of October of this year. Many alterations were subsequently made, "until, at the close of 1837, the whole, consisting of eight long corridors radiating from the observatory of the great courtyard, was finished."

233 *a*. The ground upon which the penitentiary stands contains about ten acres. It is built of stone, and is surrounded by a wall thirty feet in height above the interior platform. The observatory is a circular building, situated in the centre of the great courtyard, from which radiate (spoke fashion) eight gigantic corridors. The cells are placed on either side of each corridor, and at right angles to their longitudinal axis. Apertures are provided for the admission of fresh and heated air.

"A water-closet is concentrated in each cell in such a manner as to preserve the purity of the atmosphere. Heated air is conducted by flues from stoves under the corridor; light is admitted by sloping skylights, 12 inches by 4, placed at the top of the cell. The floor is of wood overlying a solid foundation of stone. The cells are 11 feet 9 inches long, and 7 feet 8 inches wide; at the end of the cell, opposite the aperture for inspection, is the entrance, closed by double doors—one of iron grating, the other of wood. They lead to a yard 18 feet by 8 (having walls 11½ feet high) attached to each cell." The prisoners are allowed to take exercise in this yard for an hour every day, care being taken that the inmates of contiguous yards are not out at the same time. Whilst taking exercise the prisoners are inspected by a watchman placed in the tower of the observatory. These are the arrangements which were made in the three earliest constructed corridors; but in the five others, the cells on the ground floor open directly into the intervening yards, and they are 14 feet 9 inches long. The prisoners in the upper cells are not allowed to go into the open air, their apartments being more airy than those on the ground floor.

234. When a convict is admitted, "he is taken into an office at the entrance of the Penitentiary, where he is visited by the physician, who ascertains the state of his health. He then undergoes a thorough cleansing in a bath, and is clothed in the prison dress. His own apparel, and whatever property he may have brought

with him, are then placed in a store-room, there to be kept, until the day of his enlargement, when they are restored to him. He is next blind-folded, and conducted to his cell, on his way to which he is detained for a short time at the observatory, where he is addressed by the warden on the necessity of conforming to the regulations of the establishment. On entering his cell (the number on the door of which becomes henceforth his sole designation), his hood is removed, the attendants withdraw, the cell is locked, and the convict is left to reflect in solitude on the condition to which his misconduct has brought him, and to indulge in those thoughts to which a position so unusual must naturally give rise. For the first day or two, he is not allowed to have even a Bible, nor is any employment given to him for at least a week,—a period during which he is the subject of the warden's special observation. The prisoner soon petitions for employment: two days passed in absolute idleness, sometimes suffice to give him a distaste for it. In general, the time that the prisoners remain voluntarily unoccupied varies from four to eight days, and rarely exceeds the latter number. A compliance with the convict's request in this particular, as well as the kind of employment which is permitted, is at the discretion of the warden, who regulates his determination by the crime, character, or peculiar aptitude of the prisoner. All the convicts agree in saying that the first moments of their confinement are the most uncomfortable." The convict is not permitted to meet his family or friends, nor, except in special cases, to receive letters from

them. "The inspectors, the minister of religion, the warders, the physician, the subordinate officers, and official visitors, are the only persons who are allowed to see the prisoners in their cells."

235. The penalty for giving or receiving a letter from a prisoner clandestinely is a hundred dollars. There is a regular diet scale, from which no departure is allowed except in cases of sickness. All luxuries in the shape of tobacco, beer, wine, and spirits are strictly disallowed, and heavy penalties are awarded against any outsider or subordinate, who infringes the rules in this respect. The prisoners rise, at daybreak in winter, and at from half-past four to five in summer; and they retire to rest at nine or ten o'clock. Skilful workmen continue to labour, in their cells, after sunset, for which purpose a lamp is provided. Unskilful workmen are not so indulged. The prisoners breakfast at seven or eight o'clock in the morning; they have dinner at twelve or one, and supper at six or seven o'clock in the evening. When a prisoner is ill, he is treated by the physician in one of the separate cells set apart for hospital purposes, which replace, and render unnecessary, a special infirmary building. The pioneers of the Great Republic made no abatement of the punishment in consideration of rank, position in life, or as regards the nature of the crime. All were obliged to conform to one uniform routine of discipline. Misconduct was never overlooked, and invariably entailed an appropriate punishment. "Diligence and obedience had no other reward than the approbation of the authorities of

the prison." No prisoner could be recommended for pardon, as in the other prisons of the Union.

236. Such then were the conditions under which the Separate System was fairly commenced upon in America, epitomized from the *Third Report of the Home Inspectors*, and what follows is the testimony borne to its great success derived from the same source. The special reports made by the committee appointed by the Senate "to visit and inquire into the condition and circumstances of the Eastern Penitentiary, in the county of Philadelphia," inform us that the entire management and construction and arrangements "evince the wisdom and humanity of those who projected the system of separate confinement, and the zeal and judgment of those into whose hands the administration of the plan has happily fallen." The following celebrated authorities have written in terms of the highest praise of the system pursued at the Philadelphia Penitentiary:

a. MM. de Beaumont and de Tocqueville state—"As solitude is in no other prison more complete than in Philadelphia, nowhere also is the necessity of labour more urgent. At the same time it would be inaccurate to say that in the Philadelphia Penitentiary labour is imposed; we may say with more justice that the favour of labour is granted. When we visited the Penitentiary we successively conversed with all its inmates. There was not a single one among them who did not speak of labour with a kind of gratitude, and who did not express the idea, that, without the relief of constant occupation, life would be insufferable. . . . . The Philadel-

phia system being also that which produces the deepest impressions on the soul of the convict, must effect more reformation than that at Auburn (Silent System). . . . . Let the prisoner see no one but his keeper, or a minister of the Gospel; and let him reflect in his cell upon his past course and his future prospects; but, that his reflection may not be too intense, give him employment; and he will come out, not only a better man, but with the advantage of not having been seen, known, and marked a convict. It is found by experience, that nothing has a stronger tendency to soften the hard, stubborn, vicious character, than absolute seclusion; and that is precisely the point to be obtained with the convict.

b. The Hon. D. Mondelet and J. Neilson, Esquire, were sent from Lower Canada, in 1834, to visit the principal penitentiaries in the United States, and to report upon their construction and discipline. After reviewing the various systems pursued in the prisons which they had inspected, they state, "that the foregoing considerations have induced the Commissioners to prefer the Philadelphia system, notwithstanding that it offers less immediate profit, and may even, for a time, entail considerable expense."

c. M. de Metz, the French Commissioner, stated that "I quitted France strongly prepossessed against the Pennsylvania system. But since I have seen the system in operation, my opinion has undergone a total change; and it is that very system which my conscience now compels me to put forward and contend for." He con-

tinues—"In this system we find advantages ensured to both the convict and society. Contamination is impossible; reformation is probable, and, in very many cases, certain. The solitude is favourable to reflection, to meditation, to devotion, and to reading. Moral and religious instruction is not disturbed by anything that has a tendency to produce distraction of mind to the prisoner. The punishment under this system is proportioned to the degree of the prisoner's delinquency; for solitude is more or less afflictive, according as the culprit's guilt, or moral debasement, is greater or less: for while the isolation is tolerable for him whose term of imprisonment is short, and who is consoled by the expectation of soon being able to enter upon an honest life, it is terrible for the offender, who looks forward to long years of sorrow and remorse. The solitude thus carries with it, simply by the degree of its duration, a penalty proportioned to the gravity of the offence which it is designed to punish. By availing itself of the peculiar discipline within its reach, its rigour can be modified till it nearly loses every mark of severity on the one hand, or till it acquires the utmost intensity on the other, without having recourse to any of those inflictions which are so revolting to the more refined feelings of the civilization and humanity of the present age."

d. M. Moreau Christophe, Inspector General of Prisons in France, says, "To what cause, then, is the Philadelphia System indebted for its amazing and unexampled success, but to its own efficacy, even more than to the imperfections of the Auburn (Silent)

System? If the system of Pennsylvania had no other beneficial result than to prevent the prisoners from recognizing each other, this single advantage would give it a decided superiority over every other. For there always exists so great a tie between those who have been thrown together in a prison, that when they have undergone their sentence, and are afterwards restored to society, they mutually depend on each other. Feeling themselves compromised in each other's eyes, if one of them contemplates the commission of a crime, the other is almost compelled to aid him in it: it follows, therefore, that if the character be not entirely changed, a relapse to crime is inevitable. This snare, so fatal to discharged prisoners, is indeed partially avoided at Auburn; but the danger is much more surely guarded against at Philadelphia."—The Vicomte Bretignéres de Courteilles, Count Skarbek, member of the Commission of the Interior for the kingdom of Poland, and Captain Pringle, of the Royal Engineers, her Majesty's Commissioner for inquiry into the State of the Prisons in the West Indies, may be cited as other authorities who, after having seen it in working order, gave the preference to the Separate System as enforced at the Eastern Penitentiary of Philadephia.

237. Having detailed the history and progress of the Separate System in America, down to its triumphant success at Philadelphia, I will now proceed to continue the description of its history and progress in Great Britain and Ireland. The Millbank Penitentiary was constructed with the object of fairly testing the

merits,—penal and reformatory,—of the Separate System. "Each convict's time of imprisonment was divided into two portions; during the first period he was confined in a separate cell, in which he ate, worked, and slept." After the prisoners had been thus confined for a period varying from *eighteen months to two years*, they "were removed to the second class, in which they laboured in common." "The evils of this regulation soon became apparent; and as in the case of Gloucester, the governor and chaplain remonstrated against it, alleging that the good effects produced by the operation of the discipline enforced in the first class, were speedily and utterly done away with on the prisoners transferred to the second. The evil was so strongly represented in the superintendent's committee, that in March, 1832, the second class was abolished, and new regulations were made in order to render the separation between the prisoners more complete and effectual." It was found, however, that, under the management of the reverend governor, who placed too much reliance in the efficacy of religious forms and exercises, the modified system was not attended with that degree of moral reformation which had been anticipated. Moreover it soon became apparent, that a lengthened period of solitude, extending over eighteen months, or two years, was incompatible with the preservation of the mental and physical health of the criminals. By the Act 6 and 7 Vict. c. 26, the period of separate confinement was shortened, and it was enacted that henceforth the General Penitentiary at Millbank should be called the Millbank Prison, and

be employed as a general receptacle for convicts, who were to continue there, "until transported according to law, or conditionally pardoned, or until they become entitled to their freedom, or are directed by the Secretary of State to be removed to any other prison or place of confinement in which they may be lawfully imprisoned."[1] The prison is now employed to inflict the probationary period of separate imprisonment, prior to the criminals being drafted off to Public or National Works Prisons; but a portion of its inmates are still employed at labour in association, and in silence, so far as this can be effected.

238. The partial failure of Millbank was attributed more to the swampy and unhealthy locality in which it is situated than to the duration of the separate confinement first insisted upon. It was, therefore, resolved to build a new prison, on one of the best sites that could be procured near the Metropolis, for the purpose of enforcing the Separate System. The building was commenced on the 10th April, 1840; and the Pentonville or Model Prison was finished in 1842, at an expenditure of 85,000*l.*, after plans furnished by Lieutenant-Colonel Jebb, R. E. It was opened for the admission of convicts in December, 1842, and was used to inflict the probationary punishment upon prisoners, between the ages of 18 and 35, under sentence of transportation.

239. Every cell measures thirteen and a half feet long by seven and a half broad, and nine feet high, and is provided with an earthenware water-closet, and a

[1] *First Report of the Millbank Prison*, July 31, 1844.

copper wash-hand basin supplied with water, a three-legged stool, table, shaded gas-burner, hammock, mattrass and blankets. There is an eylet hole in the door of every cell from which the prisoner can be inspected from without. "Each cell is said to have cost 150*l*. The building is ventilated, according to the artificial system, by means of an immense shaft in the roof, and the cells are heated by hot water on the basement. The medical officer reported, in 1857, that "the general ventilation and warming of the cells have been satisfactorily performed." There are exercising yards for single prisoners between the five wings (radiating from a common centre like the spokes of a half-wheel) of which the building is composed, and one on either side of the entrance hall for exercising the prisoners collectively. The prison occupies an area of $6\frac{3}{4}$ acres.[1]

240. Sir James Graham, in his letter to the Commissioners appointed "for the Government of Pentonville Prison," dated 16th December, 1842, remarked, "that no prisoner shall be admitted into Pentonville without the knowledge that it is the portal to the penal colony, and without the certainty that he bids adieu to his connexions in England, and that he must look forward to a life of labour in another hemisphere. But from the day of his entrance into the prison, while I extinguish the hope of return to his family and friends, I would open to him fully and distinctly the fate which awaits him, and the degree of influence which his own

[1] *Great World of London.*

conduct will infallibly have over his future fortune. He should be made to feel that from that day he enters on a new career. The classification of the convict in the colony, as set forth in Lord Stanley's despatches, should be made intelligible to him. He should be told that his imprisonment is a period of probation; that it will not be prolonged above eighteen months; that an opportunity of learning those arts which will enable him to earn his bread will be afforded him under the best instructors; that moral and religious instruction will be imparted to him as a guide for his future life; that at the end of 18 months, when a just estimate can be formed of the effect of the discipline on his character, he will be sent to Van Diemen's Land, there, if he behave well, at once to receive a ticket-of-leave, which is equivalent to freedom, the certainty of abundant maintenance, the fruit of industry; if he behave indifferently, he will be transported to Van Diemen's Land, there to receive a probationary pass, which will secure to him only a limited portion of his own earnings, and which will impose some galling restrictions on his personal liberty. If he behave ill, and if the discipline of the prison be ineffectual, he will be transported to Tasman's peninsula, there to work in a probationary gang without wages, deprived of liberty, an abject convict. Eighteen months of this discipline," continues the late Home Secretary, "appear to me ample for its full application. In that time the real character will be developed, instruction will be imparted, new habits will be formed, a better frame of mind will have been moulded, or the heart will have

been hardened, and the case will have become desperate."

241. The system appears to have worked well down to 1848, when a change in the character of the convicts sent there led to some adverse circumstances. The cases of mental derangement, and the general mortality, were larger during that than during any previous year. The Commissioners stated that,—"It may be difficult to offer a certain explanation of the great number of cases of death and of insanity that have occurred within the last year. We have, however, reason to believe that in the earlier years of this institution the convicts sent here were selected from a large number, and the selection was made with a more exclusive regard to their physical capacity for undergoing this species of punishment." Sir George Grey, "concurred in the opinion of Sir Benjamin Brodie and Dr. Fergusson, that the utmost watchfulness and discretion on the part of the governor, chaplain, and medical attendants would be requisite in order to administer, with safety, the system established there." The experiment was brought to a close in 1849, and Pentonville Prison was made available for the general purposes of the convict service. The period of separate confinement was eventually reduced to twelve months, and lastly to nine months. The mental affections, which were numerically large, when the seclusion of the prisoners from one another's society was continued, uninterruptedly, for eighteen months, have greatly diminished, partly by enforcing brisk walking exercise in the open air, but principally

by the reduction of the isolated confinement. From a table in Dr. Bradley's Report for 1857, it appears that the proportion of deaths, from all causes, was 3·90 per 1,000 of annual strength; whereas the average of the seven preceding years, 1850–56, amounted to 10·05 per 1,000. He says, "The mortality for the year (1857) may be considered low, whether compared with that of former years, with that of the prison population of this country, or of the general population of the same class. The annual mean mortality from disease in Pentonville for the first ten years (1843–1852) was seven per mille; the actual mortality of the prisoners of Great Britain in 1850, the latest year for which the returns have been published, was 11·8 per mille; and that of the general male population of the same ages as our prisoners has been calculated at 15·92 per mille."

242. In 1847, it was proposed, instead of resorting to transportation to Van Diemen's Land—a practice which had become very distasteful to the colony, "that all convicts should undergo a limited period of separate confinement, the advantages of which as a basis of discipline had been fully proved at Pentonville Prison. Next, that they should be sent to associated labour on public works in this country, or at Gibraltar, or Bermuda, and, as a third stage in the discipline, that they should be removed to a colony, such as those in Australia, where they might have a fair prospect of maintaining themselves by honest industry."[1] About this period the

[1] Colonel Jebb's *Report on Penal Servitude*, 1856–57.

prison at Portland was constructed, "with a view to carrying into effect the systematic employment of convict labour on national works of importance, and as affording, with the previous instruction in separate confinement, the best means of training the men to those habits of industry which would fit them, on discharge, for earning an honest livelihood, either at home or abroad."[1] The gradual abolition of the hulks was also resolved upon. For the purpose of carrying out this system, 700 cells were rented of magistrates of certain counties and boroughs, a large portion of the Millbank Prison, and the whole of Pentonville—in all 2,000 cells were employed for inflicting a probationary punishment, in separate confinement, prior to the transfer of the convicts to Portland, Gibraltar or Bermuda, there to undergo the second stage of discipline, which consisted of hard labour on public works, and the administration of moral, religious and secular instruction.

243. In 1850 transportation ceased to be a means of disposing of convicts who had undergone the ordeals of separate confinement and hard labour on public works. The Act of 1853 was passed to remedy this state of affairs. It "substituted sentences of Penal Servitude" for all crimes formerly visited by sentences of transportation, to periods under 14 years, leaving it open to pass sentences of transportation, as before, for periods of 14 years and upwards. One great defect in this law was that the sentences were irrevocable—not a day

[1] *Loc. cit.*

could they be shortened by good and exemplary conduct. The Act of 1857, however, was enacted to remedy this flaw, and to give the prisoner the power, by the display of good conduct, of effecting a certain fixed abbreviation of the term to be spent on public works. It ruled that every prisoner, sentenced to undergo Penal Servitude, should be detained for eight or nine months in separate confinement, during which period he was left to reflect on his past career, to frame new resolutions for the regulation of his future conduct, and to contract really industrious habits. After the lapse of this penal discipline, he was to be removed to undergo hard labour on Public Works. In the public works prisons there are three classes, each being characterized by peculiar privileges, the object of which being to stimulate the prisoners to endeavour, by the exercise of diligence and obedience, to obtain admission into that class which offers the greatest advantages. In the "Notice to Convicts Sentenced to Penal Servitude," it is stated that "The sentences, under the Act of 1857, have been passed with a view to certain fixed terms of imprisonment, and hard labour being in all cases inflicted; at the same time allowing a convict, by good conduct, to render himself eligible for a remission of the remainder." From this Notice I extract the following statement showing the number of months and the proportions of the sentences which may be remitted as a reward for good conduct and willing industry.

Sentence to Penal Servitude for—	May be remitted on good conduct.	Terms to be undergone.	Proportion which may be remitted.
3 years.....	6 months	2 years and 6 months	One-sixth.
4 „	9 „	3 years and 3 months	One-fifth.
5 „	12 „	4 years	„
6 „	18 „	4 years and 6 months	One-fourth.
7 „	21 „	5 years and 3 months	„
8 „	24 „	6 years	„
10 „	30 „	7 years and 6 months	„
12 „	36 „	9 years	„
15 „ and upwards.	... ...	... ...	One-third.

Sentences for life are to be considered by the Secretary of State according to the special merits of each case.

244. The modern evidence in favour of the Separate System is very conclusive. The Select Committee of the House of Commons, in their report, dated 1850, remark, "That, while the evidence as to the results of the system (separate) is in some respects conflicting, the great preponderance of evidence, including that of almost all the visiting justices and officers of the prisons in which it has been in operation, and who have been examined by this Committee, is of opinion that, if conducted under proper regulations and control, separate confinement is more efficient than any other system which has yet been tried, both in deterring from crime and in promoting reformation. 10. That individual separation ought to be applied to all prisoners before trial, as it is essential, in an especial degree, that such prisoners should be secured from all

intercourse with other prisoners, and the only mode by which this object can be properly attained is by their individual separation, under such modifications as are consistent with due consideration of the fact that they are committed for safe custody, and not for punishment. 11. That individual separation ought to be continuously applied to all prisoners under sentence of imprisonment not exceeding three months, and not being subject to mental or physical disqualification. 12. That it ought also to be applied to prisoners under long sentences, but this Committee does not recommend that it should, in ordinary cases, be enforced for a longer period than twelve months." It was accordingly ruled in the notice to prisoners in the Act of 1853, "That prisoners may be recommended for removal on special grounds at any time, but in ordinary cases they will be detained in separate confinement for twelve months." But owing to the increase of insanity among those criminals undergoing this kind of preliminary ordeal, it was notified to the prisoners, in conformity with the Act passed subsequent to the 1st July, 1857, that "Convicts, as a general rule, will be detained in separate confinement for a period of nine months from the date of their reception in a Government prison, and will be classified according to their conduct and industry."

245. The Reverend Joseph Kingsmill, the benevolent Chaplain of Pentonville, in his report, dated 11th December, 1857, says:—"Cellular imprisonment is, within due limits, a safe and salutary punishment, in my opinion, and one well fitted to form part of the

system of convict discipline. The limits must be measured by the degree of strictness which is used in carrying it out, as this strictness will affect the intensity of the solitude. . . . . Strictly separate imprisonment beyond twelve months becomes, according to my observation, dangerous to the mental health, and, indeed, to the whole physical energies of the man, and it presses so heavily on some minds that it should be carefully watched in every case, at first. With regard to its moral uses, it punishes the worst most (a great advantage), taking from such characters that courage in doing and suffering, which companionship in vice imparts. The most reckless and profligate are, under its influence, driven to reflection, and are in consequence more open to instruction, and the better sort are protected certainly in a great degree. I say 'in degree,' because if the experience of this prison be a fair criterion the thoroughly bad will find abundant means to break through separation, and to spread around them the most noxious influences. The discipline of cellular imprisonment," he continues, "has great advantages on the side of humanity, in one important particular. It requires no severity for example's sake, and allows of individual treatment of the criminal, according to his individual character and power of feeling. Separate confinement presents, in fact, the most abundant opportunities, by means of which discipline, may exercise a most wholesome moral influence in reclaiming the vicious and recovering the outcast."

246. Though Indian authorities have not as yet had

the opportunity of witnessing the practical operation of the Separate System properly so called, there is nevertheless great unanimity of opinion in favour of it. Mr. Thornhill states, in his report for 1852, that "In order to test the practicability of applying the Separate System of penal confinement to this country, my predecessor, Mr. Woodcock, erected a corridor of sixty-four cells in the Central Prison at Agra. There are also," he states, "places of solitary confinement at the Central Prisons at Bareilly, and Allahabad, and at the Delhi jail. Wherever this mode of punishment has been enforced, the effect has been highly satisfactory; the most determined ruffians are quickly subdued, and in the Agra Central Prison, to which most of the worst characters are sent, the efficacy of the separate cell, in the preservation of discipline, is most remarkable." It appears, however, that "these cells are not adapted for the continuous seclusion of a criminal; they are useful as punishment cells for short periods only," and they have frequently been used as such with marked advantage. Mr. Bettington says, in his report for 1854–55, that experience is in favour of the reformatory influence of the Separate System, and is of the opinion that "there is no injury to health or intellect to be apprehended from *limited periods of that punishment in properly constructed cells.*" Mr. Rhode, after "twenty years' personal experience of the inefficacy of the present system," felt assured that nothing satisfactory could be done, in regard to the improvement of prison discipline, in Madras, without a radical change in the construc-

tion of buildings; and though he did not urge that the Government should commit itself to any thorough change in the buildings which might be retained, yet he said that he would "be sorry to see any new building commenced in which provision is not made for the separate imprisonment of each inmate." Again,—he writes that, after having carefully perused the evidence taken by a Committee of the House of Commons in 1850, his impressions "were that no satisfactory amendment in the system could be looked for, especially in this country, where our instruments are so defective, but by the introduction of the *Separate System* for the first period of say nine to twelve months, relaxing it to the Associate System, during the day, with labour."

247. But, whilst giving the evidence in favour of the Separate System, it is only fair to state the objections that have been offered to it, on the part of those who have opposed its introduction. These are as follow:—1. It is objected that sufficient provision for the moral, spiritual and intellectual improvement of the criminals is incompatible with the Separate System. 2. That no arrangements are made to allow the prisoners to take exercise in the open air. 3. That, under such complete isolation, it is impossible to prevent frequent acts of turbulence and insubordination. 4. That "by removing from the prisoner all temptation to offend, we deprive him of that moral training which consists in teaching him to control those passions which the circumstances in which he finds himself placed have a tendency to excite." 5. That it affords no adequate

means of keeping the prisoners constantly employed. 6. That, "it is impossible for the Governor to make a personal inspection of each of the cells daily, when the number of prisoners is large." 7. That it operates with inequality upon different individuals, "according to their peculiar physical temperament, moral disposition and habits." 8. That the offensive smells from the water-closets must make the atmosphere of the cells unwholesome. 9. That its introduction must be attended with considerable expense. 10. That it will be difficult to find out when the criminals require assistance, from disease or otherwise. 11. That "it has a direct tendency to impair the physical and mental health of the prisoner." The first ten objections have been practically refuted by the Pentonville and Philadelphia experiments. But that there was good reason for believing in the validity of the 11th objection is apparent from the fact that the prolonged periods, which characterized the Gloucester and Philadelphia trials, have gradually become reduced to the probationary period of nine months' separate confinement as practised at Pentonville, Millbank, and in all the other prisons, in England, Ireland, and Scotland, which contain cells for the infliction of this kind of punishment. Still, in one of Colonel Jebb's late reports, we find him lamenting the reduction to such a limited period, earnestly hoping for the time when twelve months' separate confinement will again be rendered legal by an Act of the Legislature.

CHAPTER XIV.

SCHEME OF DISCIPLINE FOR INDIAN PRISONS.

248. The importance of having a sound and comprehensive system of prison discipline, suited to this country, will fully appear, when it is stated that, during 1858–59, the daily average strength of criminals, in 54 prisons, in Lower Bengal, amounted to 20,282;[1] that during 1857, it amounted to 6,178[2] in 31 Madras Jails; that, during 1853, it amounted to 3,421[3] in 14 Bombay Jails; that, during the same year, it amounted to 21,349[4] in 34 Jails of the North-West Provinces; and that, during 1857, it reached 11,959[5] in 29 Punjab prisons; or that, during one year, the daily average strength amounted, in round numbers, to 63,189 in *one hundred and sixty-two jails.* If we take a financial view of the matter, we find that, during the periods corresponding to those just mentioned, the

[1] *Report of the Jails of the Lower Provinces*, for 1858–59. App. II.

[2] *Report of Inspector-General of Prisons, Madras*, for 1857–58, p. 175.

[3] *Report of the Inspector-General of Prisons, Bombay*, for 1854–55.

[4] *Report of the Inspector-General of Prisons, North-West Provinces*, for 1853.

[5] *Report of the Inspector-General of Prisons, Punjab*, for 1857.

general prison expenditure, incurred in Lower Bengal, amounted to 8,83,919 rupees; in Madras, to 3,37,287 rupees; in the North-West Provinces, to 7,40,533 rupees; and, in the Punjab, to 3,84,760 rupees; giving a round total, for all India (Bombay excepted—the necessary information not being at hand to enable me to include this presidency in the general account), of 23,46,499 rupees. Even after deducting the return cash balances, accruing from manufactures and labour on public works, it is probable that the aggregate annual cost for confining, clothing, feeding, physicking and guarding 59,768 prisoners (the daily average of all the jails for one year, exclusive of Bombay), cannot be far short of 200,000*l.* But, if the expense of the costly machinery employed by the Government to bring the criminals to conviction, and the cost to society in aiding the authorities to bring them to justice, were added to the account, it is possible that two or three millions sterling would not do more than cover the total cost to the Indian tax-payers, from whom all this money must eventually come. "When we call to mind," writes Hutchinson, "the great trouble and expense—for loss of time is both loss of labour and expense—incurred in the conviction of these persons; when we know, that in almost every instance, their families are thrown unprovided for, for the time, on the community; when we reflect that these swarms of human beings are again successively let loose on society in a greatly deteriorated state as to character," the importance of introducing, at whatever cost, a thoroughly deterrent and reforma-

tory system of prison management becomes manifest enough."

249. That the present construction of buildings and discipline are utterly opposed to either the infliction of punishment, or the establishment of moral regeneration, has been repeatedly acknowledged by the highest authorities. The prisons of this country are not very dissimilar in some respects to those of Great Britain, when Howard published *The State of the Prisons in England and Wales*, in 1775, in the second section of which it was conclusively demonstrated that, from the "want of classification, or separation among the inmates, each prison was not only a scene of riot and lawless revelry, and filth, and fever, but it was also a college for young criminals, where the juvenile offender could be duly educated in vice by the more experienced professors of iniquity." Let us examine the facts closely to see whether the simile applies or not. Dr. Mouat stated in his report for 1856–57, that "the regulations of the Government are carefully attended to by most magistrates, so far as shutting up the same classes of prisoners in the same wards at night; but in scarcely a single prison do complete means of separating them by day exist. The only result of the present plan is to overcrowd some wards, and leave others nearly empty, to the manifest detriment of the health of those confined in the former. For penal and reformatory purposes, it is practically useless, and with the present construction of jails, to attempt to amend it is visionary and impracticable."

In his report for 1857–58, he says—"In the whole of the Lower Provinces of the Bengal Presidency, there is but one really secure prison, and that is the Alipore Jail. In every other place of imprisonment, it is impossible to separate the prisoners by day and night, so as to prevent combination. Many of the outlying jails are mat huts, with frail bamboo or mat walls, securing the highest possible standard of insecurity. In one of them—the Pubna Jail—a prisoner dug his way out with his fingers, and, on a dark night, escaped under the nose of the European sentry on guard at the spot." In his report for 1858–59, he states, after having practically completed an investigation into the means available to carry the system of classification as designed by the orders of Government into effect, that "the special reports of the jails show that, in the majority of the prisons of the Lower Provinces, classification exists but in name. In many, heinous offenders are separated from simple misdemeanants; males from females; civil prisoners from criminals; and prisoners under trial from convicts. But the means of separating all those classes of offenders by day and by night, exist only at Alipore, and even there they are imperfect. In many of the jails there is no attempt at classification, the construction of the places not admitting of it. In some few it has at times been dispensed with in consequence of overcrowding and sickness rendering it more necessary to consider the cubic space available, than the crimes of the inmates."

250. In Madras, the discipline of the prisons is

depicted in the following condemnatory terms, by Mr. Rhode, in a very able report, delivered to the Chief Secretary to Government, under cover of the Inspector's letter, dated 30th April, 1856. "In regard to the mode in which sentences are carried out, it is very lax; we have no means for enforcing hard labour within the walls, and the work which is exacted outside, is, to a labouring man at least, anything but *hard* labour; in most jails no fixed task is exacted; prisoners are too often employed with very little regard to the object of their being in prison; they have, outside the walls, access to their friends. There is too much community of feeling between the guards and the prisoners. (In one instance last year they united in committing a highway robbery.) The diet of our prisoners is rather an inducement to offenders than otherwise. (This is not the case.) Unfortunately the mortality of some of our jails induces a continuance of the ample fare and additions of what to the natives are luxuries. Our jail establishments are such that any very great improvement is hardly to be expected till the prisoners are retained under the immediate eye of one trustworthy head. The pay (generally 20 rupees now given to that head) certainly does not justify the expectation, that regard for it should induce a man to resist temptation. Every jailer has necessarily very much in his power; the present system of employing convicts gives great openings for indulging favoured prisoners. The establishments of the jails offer no facilities for doing more than guarding the prisoners. Several of the jailers

cannot read or write. The European jailers are generally unable to understand, or make themselves understood by, the prisoners. All the rest of the establishment are of the class of persons, often for a series of years associated with convicts, their superiors in social position; and this association must, to some extent, continue so long as the present system of out-door labour continues." Again—"All the jails are defective in the means for classification, even to the extent required by the regulations;[1] separate wards may be set apart for the several classes of male convicts, but in no case are there proper arrangements for classifying females; indeed in some jails they have not even a separate enclosure. At Nellore one enclosure is common to all untried prisoners, debtors and females. In some jails there are separate wards for tried and untried females; but in no case, I believe, are the arrangements such as to prevent their associating

[1] Section XXIX., Regulation X. of 1816:—"Separate apartments in the jail shall be allotted for the following descriptions of prisoners: '1st. Prisoners under sentence of death. 2nd. Prisoners sentenced to confinement by a *Criminal Judge*, by the *Court of Circuit*, or the Foujdaree Udawlut. 3rd. Prisoners committed to take their trial before the *Court of Circuit*. 4th. Prisoners sentenced to confinement by the magistrate for petty crimes or misdemeanors cognizable by him.' And as the crimes proved or alleged against the second and third descriptions of prisoners must be of different degrees of atrocity, the *Criminal Judges* are required to separate those who have been found guilty or accused of heinous crimes of less magnitude. They are likewise to separate the male from the female prisoners, so as to prevent their having any communication with each other, and the rules prescribed in this section for keeping apart the several descriptions of the former are to be considered applicable also to the latter." —(Mr. Rhode.)

during the day. Where a separate enclosure is set apart for committed or security prisoners, there are no means of separating them; all are herded together. There is no special provision for enforcing sentences to solitary confinement. The result is that this most eligible mode of punishment is now rarely resorted to. There are, it is true, what are called solitary cells in some prisons; but they are either such as ought never to be used, as at Chingleput and Mangalore, or are defective in other respects. In most of our jails all male prisoners are within a common enclosure, and to show how little the necessity for separating the classes is considered, a common yard is provided in the new jail at Honawur and at Trichinopoly for debtors and prisoners under trial; there is no provision for female debtors. This is now the more needed since the *Court of Sudr Udawlut* have laid down rules for the immediate incarceration of defaulters."

251. In the Bombay Presidency, Mr. Bettington states, in his report, for 1854–55, para. 5, p. 19, that "the plan of classification which at present obtains generally throughout the Presidency, is to separate those convicted of manslaughter, gang-robbery, and other crimes of violence, from those convicted of comparatively minor offences. Beyond this the practice varies in every jail, and has no merit or value whatever; it generally resolves itself into regulating the ward by the term of imprisonment, without reference to the offence; and old offenders of half a dozen convictions are found with first offenders, sentenced to about the

same term of imprisonment." Again—on the 22nd of July, 1854, Mr. Bettington found cases of "*fraud* classed with those of *murder*; *embezzlement* with *gang-robbery*; *treason and rebellion* with *piracy* (Malay pirates of desperate character); *bribery* with *gang-robbery*; *coining money* and *forgery* with *piracy* and *culpable homicide*; *embezzlement* with *arson* and *nose-cutting*." Further, he states that, "Among women there is no classification whatever."

252. In the North-West Provinces, Mr. Thornhill says, that the "subject which attracted my attention most forcibly during the tour of inspection was the absence of uniformity in the mode in which a sentence to hard labour is carried into execution in different districts. The law assumes that the amount of suffering comprehended in any sentence of punishment is fixed and measurable, and that in whatever jail it may be carried into effect, its amount remains the same. But many magistrates appear to lose sight altogether of the chief object of the infliction of punishment, and to consider that the services of an able-bodied convict towards the repair of a road, are of far higher value to society than the attainment of that object. These officers, consequently, exact the same description of labour from all their prisoners. The murderer and the burglar, the dacoit and the thief, are all worked in the same gang with the high-spirited Thaquoor, who has joined in a party fray. If they are employed upon a line of road leading from the station, they cease to return at night to the jail, when the progress of the work causes the

journey to and fro to occupy too much of their valuable time; temporary huts are then erected; the gang is no longer under the immediate inspection of either magistrate or jailer, and the most desperate criminals for whose secure custody the Government has expended 13,39,000 rupees in the erection, and continues to pay 1,63,000 rupees per annum in the guarding of permanent prisons, are scattered over the face of the country, confined at night in canvas tents or insecure sheds under control of inferior officers and ill-paid guards, whom experience has shown to be too venal or too timid to attempt to coerce the wealthy or desperate criminal. . . . . The punishment of imprisonment, as it is now enforced in the majority of our jails, is little dreaded by that portion of the community which furnishes the larger number of their inmates. To those accustomed to daily labour the comparatively easy work on the roads is no hardship. The prison diet is superior both in quality and quantity (?) to what they are accustomed to at home; a trifling gratuity to the guard secures frequent intercourse with their friends; they are protected from the extreme of heat in summer, are well clothed in winter, and in times of sickness receive from experienced Medical Officers every assistance which skill and humanity can bestow. So long, therefore, as the intending offender looks forward to detection and conviction as merely involving a partial separation from his friends, under circumstances of so little hardship, the fear of punishment will not be sufficiently great to counteract the temptation to the commission of crime."

253. The system of discipline appears to be more strict in the Punjab, where out-door labour is generally prohibited by authority. "No prisoners are allowed to be taken out of jail for necessary purposes, out-door labour being totally prohibited, except in the garden, which must be close to the jail, and made according to the prescribed plan, with an enclosing wall six feet high." All females are to be kept totally separate from the males, in a detached building. The male prisoners are directed to be kept in separate wards, according to the following scale of classification:—

1. Prisoners under examination, or not convicted.
2. Prisoners committed to the Sessions.
3. Debtors, Civil and Revenue.
4. Europeans and Eurasians.
5. Boys and juvenile offenders, under sixteen years of age.
6. Cases of misdemeanour and petty offences.
7. Cases of coining, forgery, perjury, adultery, &c.
8. Cases of theft, cattle-stealing.
9. Cases of highway robbery, burglary.
10. Cases of wounding and murder.

"The solitary cells in every jail are to be kept constantly occupied, the duration of imprisonment being limited to fifteen days at a time. The class of prisoners, who should be first selected for solitary confinement, are notorious offenders, who have been committed more than once to prison, and cases of crime most prevalent in the district." Even the above imperfect classification is only expected to be in operation during the night. It is, to

a great extent, nullified when the prisoners go to work together during the day. Is the Lahore Central Prison an exception to this rule? Perhaps so.

254. A careful perusal of all the above facts will show that the discipline in Indian prisons is exceedingly imperfect. A system of management—the natural consequence of badly-constructed prisons, a corrupt, badly-paid, and insufficient executive,—which *must* continually throw the most depraved and hardened villains into the society of the incipient offender,—which allows almost promiscuous association by day, or during both day and night,—which brings the boy who has stolen the minutest fraction of the decimal coinage of the empire, the youth or spirited rajpoot who may have been active parties to an affray arising out of a village or boundary dispute, into the company of the aged criminals convicted of burglary, dacoity, or murder,—which, in a word, places the inexperienced in crime as audience to the life-long professors of vice and iniquity, is as much opposed to sound penal discipline, as it is to the reformation of the convicts. Under such circumstances nearly every prison must constitute an academy in which those prisoners convicted of *minor* offences are compulsorily subjected to the demoralizing tuition of those who have been found guilty of the *most diabolical* crimes—not only so, but the employment of the convicts at out-door occupation, before they have been made to feel the overwhelming power of the law, by the infliction of a preliminary period of really deterrent discipline, brings them into contact with the external peaceable

population to contaminate them, to receive luxuries from their friends and old free accomplices, things which are rather conducive to the propagation of, than to the prevention of crime.

255. As the immediate objects of incarceration are the protection of society and the secure custody of the suspected or convicted offender, so are the remote objects of a comprehensive and philosophical scheme of prison discipline deterrent and reformatory,—the former in order to prevent the criminal from recurring to, and all others criminally disposed from committing crime,—the latter, with a view to effect, as much as possible, the moral regeneration of the convict. That none of these objects are accomplished in Indian prisons is evident from their proverbial insecurity and the almost universal application of fetters to mitigate such insecurity, and from the unanimous opinions of the official inspectors regarding the hopelessly defective constructural arrangements, and corrupt subordinate establishments which are mainly responsible for the interior economy and discipline of the jails. What we require is a system of prison discipline which will comprehend the secure custody of the criminals; the protection of society; the means of preventing all criminals, on discharge, from returning to evil habits, and of deterring all intending offenders from criminal transgressions, by operating on the magnified conceptions of their imaginations; and the reformation of the prisoners by practically demonstrating to them the fact that "honesty is the best policy," that it is best for their comfort, happiness, and

interest to lead lives of probity, uprightness, and peace with the remainder of their fellow-men.

256. *Deterrent Discipline.*—So long as promiscuous association, or at all events a very imperfect method of classification according to the nature of the offence of which the prisoner has been proved guilty, or to the periods of sentence, is allowed to prevail, from the commencement to the termination of imprisonment, it will be utterly impossible to inflict deterrent punishment, in such a manner as to make it the basis upon which to raise the superstructure of permanent reformation. What terrors can a prison have to a resolute and confirmed vagabond,—who is never subjected to a really subduing preliminary punishment,—if he is permitted, from the moment he enters the jail till he quits it, to have unrestricted communication with his companions in vice,—to gain an ascendency over their feelings, and, by the force of his own excessively vicious character, to assume, or be elected to, the schoolmastership of everything that is wicked and iniquitous, for the purpose of drilling every novice, or even his more advanced pupils, in all the arts and mysteries of his illegal avocations? What terrors can a prison exercise upon the first offender, if, instead of being placed in a position of irrevocable punishment preparatory to subsequent moral regeneration, he is immediately after conviction, compelled to undergo a course of infamous training, under the ascendant reign of some irreclaimable villain, who occupies the professorship of criminology in this collegiate institution for the reciprocal and universal

dissemination of the blackest vice and crime? What terrors can a prison produce on the minds of the more moderate offenders, so long as the discipline creates a competition between its inmates for excellency in the relation of secrets, adventures, and exploits with the object of eliciting, from the surrounding audience, approbation, admiration, and rapturous applause? What terrors can a prison exercise over the minds of the juvenile or novice confined, perhaps, for stealing a morsel of food, during periods of scarcity or actual famine, under the trying combination of absolute pecuniary destitution, no employment, an irresistible appetite, temptation, and opportunity, in preventing him from again having recourse to dishonesty, when we place him in the company of the most hardened and irrecoverable convicts, there to listen to their coarse anecdotes, to witness their false courage and bravado, to drink in the first principles of all that is diabolical and depraved, and eventually to become a participator in the commission of future depredations and crime? And lastly, what terrors can a prison convey to intending offenders, or the criminally disposed, or the really honest man at heart, compelled to beg, and, this failing, to steal in order to keep body and soul together, when those, who are released from confinement, are ushered forth into society in a position to relate, to their accomplices, or those ready to become so, their thorough disregard, their utter contempt for the penal chastisement, to which they have been subjected,—to become, in fact, each in his own peculiar sphere a *radiating*

focus for the instruction of others in the black *ars criminis?*

257. It is positively certain that the first great remedy for the cure of all these evils is the complete interdiction of all communication between the convicts, during a safe period, beginning immediately after conviction. That a preliminary period of separate confinement can be undergone, with safety to both body and mind, in nearly all cases, *excepting those already strongly predisposed to, or actually suffering from, mental or corporeal disease,* has been amply proved at the Philadelphia Penitentiary in the United States, at the Millbank and Pentonville Prisons in England, at the Perth General Prison and Glasgow Bridewell in Scotland, and at the Mountjoy and Newgate Prisons in Ireland. That this kind of punishment can be successfully introduced into this country has been conceded by Mr. Thornhill and Mr. Rhode, who, though admitting that the attendant preliminary outlay would be considerable, yet very justly entertain well-grounded hopes that, in the long run, it would prove to be truest economy of the public money.

258. Mr. Thornhill, after elucidating a few of the more prominent of the many evils attending, and inseparable from, the present laxity of discipline in, and defective construction of, the prisons of the North-West Provinces, (1853), says, "The discussion of separate confinement has occupied so much of the public attention, during late years, that it is unnecessary again to enumerate its many advantages as regards the discipline of a jail.

There is, however, one point of view in which it may merit the favourable consideration of Government, and that is, the enormous saving which would result from its general introduction into this country. 79. Human beings, differing so widely in their moral and physical constitution, cannot be reduced to a fixed standard from which their sufferings or enjoyments may be estimated. 80. That which is almost unbearable to a person of sensitive temperament may be regarded with indifference by another of duller perceptions; it is, therefore, impossible to define with exactness, what amount of separate confinement is equivalent to a given period of imprisonment in the usual manner. 81. As far, however, as experience furnishes us with the data for any conclusions on this point, one day of separate confinement is equal to three days of associated imprisonment. Assuming this proportion to be practically correct, the adoption of the separate system would cause the reduction of two-thirds in the present periods of imprisonment. 82. The criminals confined in the North-Western Provinces, during the past year, amounted to 21,133; their cost to the State, during the same period, was 7,41,747 rupees. 83. The diminution of the terms of imprisonment by two-thirds would reduce the annual average number of prisoners from 21,000 to 7,000, of which number about 1,000 would be for very short terms, and would consequently remain in the lock-up houses at each station. 84. Three central prisons would conveniently accommodate this number, and in lieu of the existing Jails, lock-up

houses for carrying very short sentences into effect would be substituted. The establishment at each of these would amount to 122 rupees per mensem, or 1,464 rupees per annum, according to the scale already sanctioned in the Muttra district. 85. The cost of constructing each solitary (separate) cell in a corridor of 64, amounts to 130 rupees, but if the expense of Governor's house, guard rooms, exercising yards, cooking houses, outer boundary wall, &c., be distributed over each cell in a prison containing 2,000, the cost of each cell will be 250 rupees, or for three central prisons, on the separate system, containing 6,000 prisoners, an outlay of 15 lakhs would be necessary. 86. The cost of maintaining the requisite establishment at each of these prisons would be 50,000 rupees, or one lakh and a half per annum for three. 87. The cost of feeding, clothing, and miscellaneous expenditure for 7,000 prisoners at 15 rupees per head per annum would be 1,05,000 rupees. 88. The comparative account would then stand thus:—

	Rupees.
Cost of three Prisons for 6,000 men in separate confinement	15,00,000
Cost of Establishment for ditto per annum	1,50,000
Cost of Establishment for 30 district lock-up houses, at 1,464 rupees per annum	43,920
Cost of Feeding, Clothing, and miscellaneous charges for 7,000 prisoners, at 15 rupees	1,05,000
	2,98,920
Add 10 per cent. for contingencies	29,892
Total Rupees	3,28,812
Present Annual Cost of Prisoners	7,41,747
Annual Saving	4,12,935

He continues: "This annual saving of upwards of four lakhs of rupees would, in four years, repay the outlay, for new buildings, which have been calculated at the highest possible rates, without making any deduction on account of the labour of the convicts, which would be most extensively employed in their construction."

259. A cursory examination of the above estimate will show, that it is based on the assumption, that it would be practicable to carry out the system of separate confinement with such unmitigated rigour as to effect, with security to society, the abbreviation of the time of each prisoner's sentence to the extent of two-thirds, or of two out of every three, four out of every six, six out of every nine, and eight out of every twelve years, an amount of remission, or shortening of the period of confinement, which could never be countenanced by the Legislature, even if it were possible (which it is not) to continue separate confinement for such long periods as two, three or four years with safety to the mental and physical health of the convict. Few constitutions could long survive such a severe ordeal, if the system were carried out in such a manner as to accomplish the constant and unremitting isolation of every prisoner from all his comrades during the whole period of his imprisonment. I think, therefore, that Mr. Thornhill's estimate requires modification, and that he would require to add two or three more central prisons to his account to meet all the demands of a sound system of penal discipline comprehending only a probationary period of separate confinement as an essential element of its

efficacy. I am, nevertheless, of opinion that even then the money would be well laid out, and that it would, in great part, be ultimately refunded to society by ensuring the diminution of crime; the reformation of by far the largest number of the convicts, who, on discharge, would resume their places as honest tax-paying units of the productive State machine; and lastly, by making each prison not only a reformatory, but an industrial and self-supporting institution.

260. It appears to me, after a very careful review of this subject, that no plan of discipline can be effective to deter, which does not embrace, as its first, most vital, and fundamental principle, the infliction of from eight to nine months of separate confinement, during which period each prisoner would be kept absolutely apart from every other prisoner within the jail. All convicts of whatever kind sentenced to imprisonment, for periods up to nine months, should undergo the whole period of their sentences in isolation from the other inmates of the prison. Nothing but mental or physical disqualification ought to be allowed to interfere with the rigorous application of this rule. In those instances where such criminals have been thus incarcerated for eight months, the remaining month might be remitted and the prisoners unconditionally liberated provided they have been well conducted, industrious, and given evidence of reformation. All convicts sentenced to imprisonment for periods over nine months, should undergo the first eight months in separate confinement, without being allowed the privilege of a remission of a single moment of the period, except

in cases of sickness, but with the advantage of wearing a badge for having conducted themselves well, whilst enduring that punishment, which badge would count in their favour, when the governor has to make recommendations for a remission of a portion of their subsequent secondary imprisonment.

261. In order to enforce this probationary discipline, it would always be necessary to bear in mind what the Separate System, in its integrity, really demands. It requires, 1. "That each individual prisoner shall be separately confined by day and by night in a cell which shall be lighted, thoroughly ventilated, and of sufficient size to admit of his being employed within it, in manual labour. 2. That the construction of these cells shall preclude all communication between one prisoner and another. 3. That the cells shall be fitted up with every necessary convenience, so that there may be no excuse for a prisoner quitting his cell until ordered to do so, but that he shall have the means in his own power of apprising the officer of his wants. 4. That there shall be the means not only of complete and uninterrupted general inspection and superintendence, but that each prisoner shall be subjected to unobserved inspection; and as it is an essential part of the system that each individual should have frequent communication in the course of the day with one or other of the prison officers, the utmost facility of access should be secured to all parts of the prison to every cell. 5. It would tend greatly to the convenience of administering this kind of discipline, and save much additional trouble

to the officers, if the cells be fitted up with the means of washing, and with other conveniences, so as to render it unnecessary for a prisoner to quit his cell until ordered to do so. 6. In order that the integrity of the system may not be infringed on, by the stated assembling of the prisoners for work or instruction, separate working yards and compartments on the crank machine of the well shall be provided for the purpose, in the proportion of one compartment for every ten prisoners."[1] Recent improvements have abolished the association of the convicts in any way whatsoever, whilst they are being subjected to separate confinement.

262. With a view to carry out these measures, and to distinguish "separate" from "solitary" confinement, the Home Inspectors considered that the "following provisions should form part of any law which might be formed for this purpose:—1. That no cell be made for the separate confinement of any prisoner which is not of such a size, and is not lighted, ventilated, and fitted up in such a manner as is consistent with the health of a prisoner, and furnished with the means of enabling him to communicate at any time with the officers of the prison. 2. It shall be provided that no cell be used for the confinement of a prisoner until its fitness in the above particulars shall have been duly sanctioned and certified by the Inspector of Prisons. 3. That every prisoner, separately confined, shall be visited once at least every day by the governor or deputy governor and

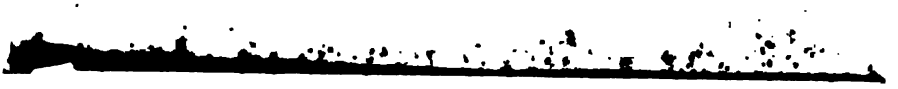
[1] *Third Report of the Home Inspectors.*

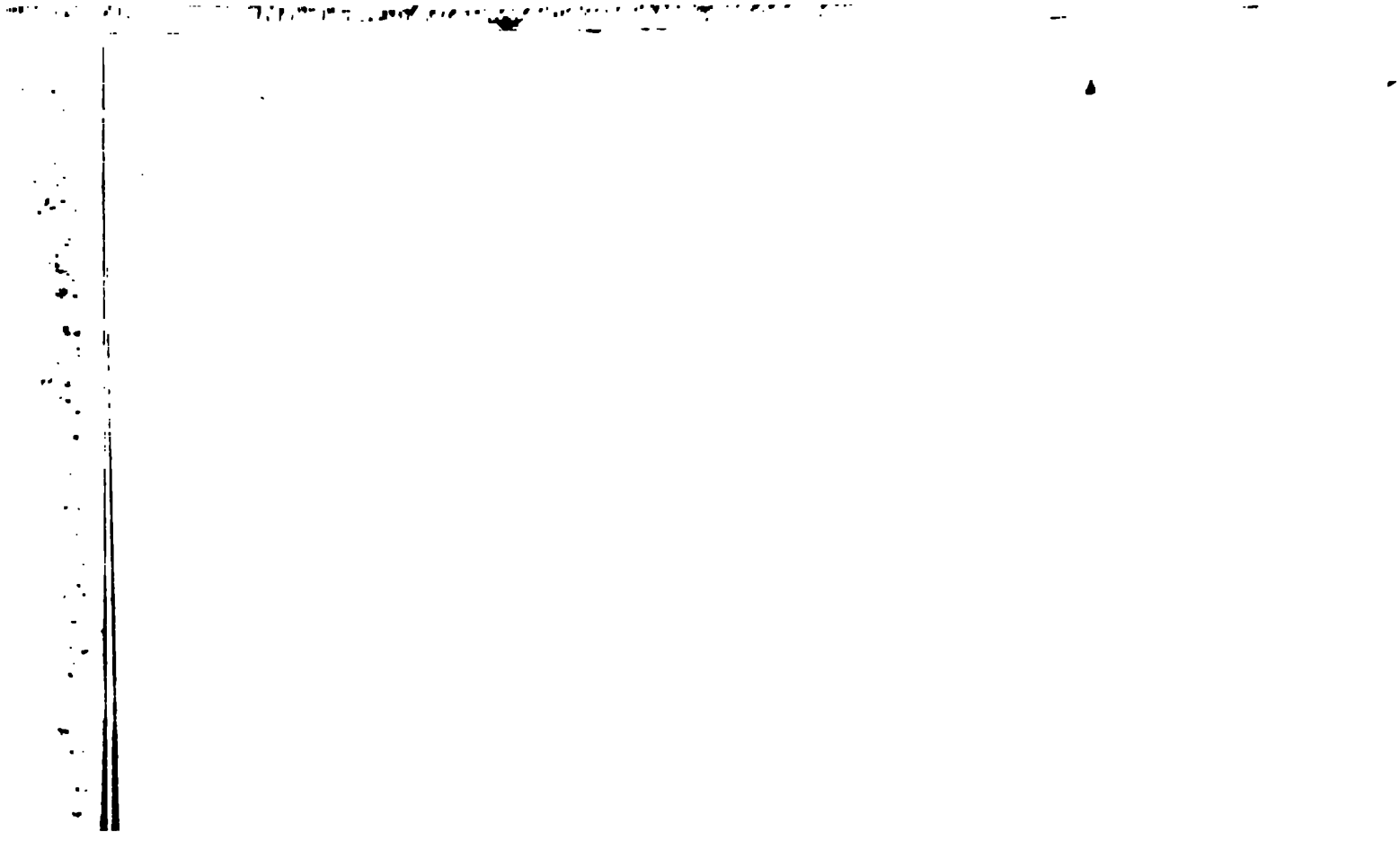
surgeon of the prison, in addition to the visits that may be made to such prisoners, at other times, by the same or other officers of the prison, and that every prisoner shall have the means of taking air and exercise at such times as shall be deemed necessary by the surgeon, and shall be furnished in his cell with labour and employment. 4. That separate confinement under the aforesaid regulations shall not be deemed to be prohibited as 'solitary' confinement by any law in force."

263. As the cells in this country would be constantly inhabited by night and by day, their size, lighting, ventilation, and sewerage, and general interior arrangements ought to be as perfect as they could possibly be made. It ought also to be borne in mind that each of these cells would be, in practice, the representative of a distinct prison, in which the prisoner could work, eat, sleep, and be treated for sickness of a trivial and unimportant nature. In more severe illnesses the convicts ought to be treated in what might be considered the hospital separate cells, which ought to be set apart for this purpose; these should be more airy and capacious than those employed for persons in good health.

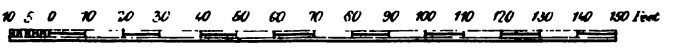
264. As regards the form of building that would be most suitable for this country, it is probable that the plan suggested by Mr. Rhode, for the Central Prison at Madras, would be found to answer best. He says,— "As the erection of a new jail necessarily involves the question of the mode of treatment and the suitability of the building to that mode, I may be permitted to

state generally that, after duly weighing the merits of the various systems, and considering each with reference to the character of the inmates of our jails, I have no hesitation in saying that that, which experience has proved the best fitted for the European prisoner, will be found to be best suited, in every respect, in this country. I allude to the system of separate confinement with labour. This seems to me essential to break that spirit which opposes itself to all reformatory efforts. After a year's imprisonment in separation from his fellow prisoners, I think, there will be no difficulty in enforcing discipline, in association, which I should despair of with prisoners who had not undergone this previous training. The form of building must be such that every movement of every inmate in the first stage of imprisonment is under observation, and fortunately the climate is most favourable to such construction. I would, therefore, propose the arrangement of the cells in the form of a circle, or segments of circles having a common centre, the warder's rooms being in the middle. Where the building was but of one story, as I propose for the Salem district prison, the circle might be best; and I think the expense need not exceed one rupee for every foot under cover, and would probably be less. Allowing then 100 cells 12 feet deep, 12 feet high, and having 7 feet as their mean breadth (being radial), there would be 1,000 cubic feet to each, with ample room for looms, spinning wheels, or other implements. Mr. Rhode's plans are herewith annexed for the information of my readers. It will be perceived from





Scale to Plan 50 Feet to the Inch.

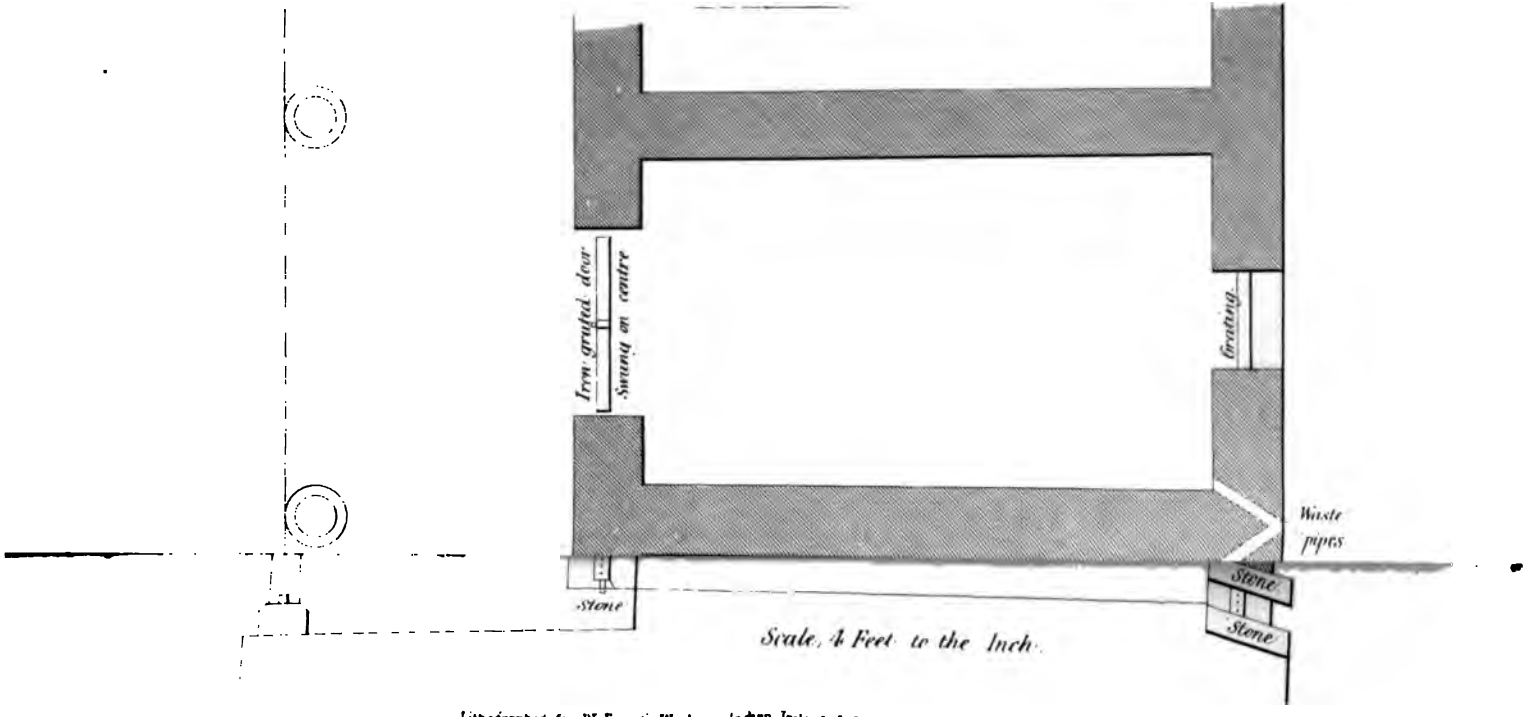


Lithographed for

CENTRAL PRISON. No 3.

PLAN OF THE CELLS.

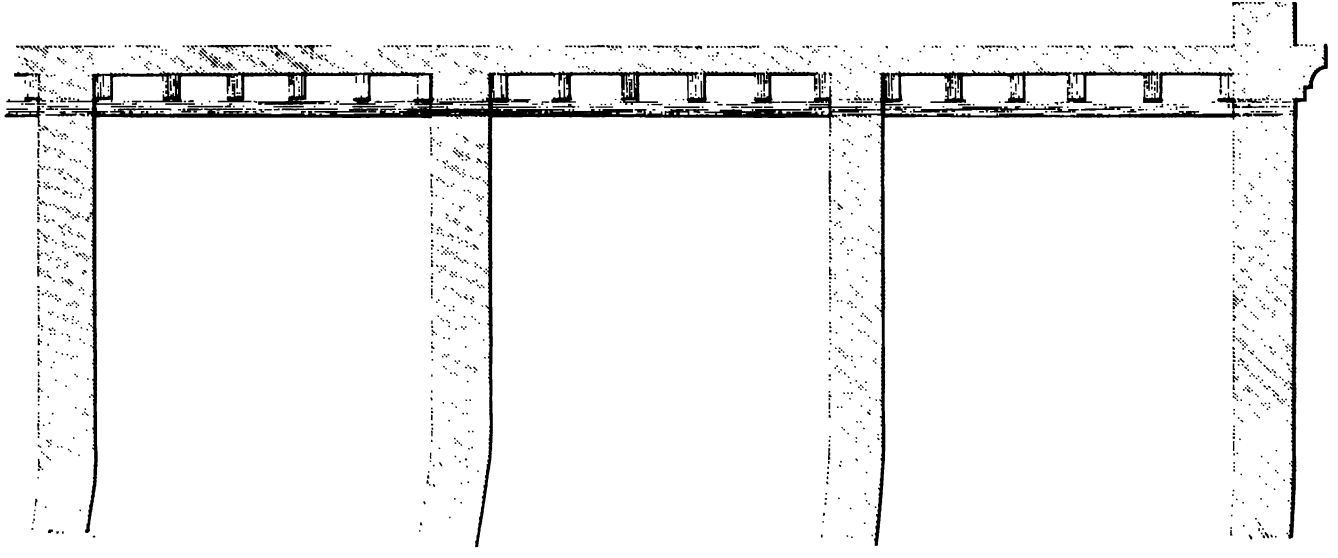
If terraced over Joists, arched by Brick, or roofed with Stone slabs.



Lithographed for Dr Ewarts Work on Indian Jails, & Published by Smith Elder & Co 65 Cornhill London 1860

CENTRAL PRISON. No4.

SECTION OF BACK OF CELLS.



hem that the design is well calculated to suit the emands of the Separate System as a probationary unishment in all its integrity in any given segment, hilst secondary punishment, consisting of hard labour a classified association by day, and sleeping in complete isolation by night, can also be carried out.

265. Having subdued the prisoner sentenced to eriods above eight or nine months; having practically emonstrated to him that when once he is within the lutches of the law, he must, whether he likes it or not, e isolated for a time from all his accomplices and ssociates; having placed him in a state of solitude to onder over his past conduct and to weigh its disadantages with the advantages of honesty and liberty; aving compelled him in a kind manner (for all the rison officers ought to sympathize with, and be kind o, him, without being familiar) to enter into communion with himself, to regret his past crimes and to rame new resolves; having taught him to associate abour with pleasure and happiness, and to consider it esirable rather than distasteful; having convinced him hat honest occupation, however humble it may be, is ar better for his own personal welfare, and for that of is connections, than the practising of "*the desire to cquire property with a less degree of labour than by rdinary industry;*" having impressed all these things pon him, partly by solitude, and partly by instruction, n the hope that the impressions may be permanent and nduring throughout the remainder of his future life, he prisoner should be released from separate confine-

ment. He should then be placed in the class to which the nature of his offence assigns him, to undergo hard labour in classified association, to receive secular instruction and knowledge which will be useful in guiding and moulding his future conduct, and to pass his whole nights in complete isolation from all the other inmates of the prison.

266. *Reformatory Discipline.*—The truly penal stage of discipline having been completed, the best foundation is made whereupon to erect the noble structure of reformation. We have now to instil into the prisoner's mind the incalculable value and pleasures of an honest life of industry as compared with the haphazard and precarious pursuits which have brought down upon him and his relatives much suffering, sorrow and remorse; so that, on the expiration of the term of his imprisonment, he may be an important instrument in deterring others and especially his own immediate friends and connections from running the risk of coming under the influence of prison discipline. We have to make labour not so much a punitive measure as a pleasurable occupation by associating it with some useful object, viz., the quiet, peaceable and happy maintenance of himself and his dependents, in order that he may be turned out of jail not only a better man than when he first became subject to its inflictions, but that he may be effectually prevented from ever after returning to his old and formerly congenial habits. These, then, are the objects, which must ever be held in view, during the secondary, or reformatory confinement.

267. To prevent the evils which can never be totally severed from the most perfect system of classification that was ever invented, we have no alternative, during this reformatory punishment, but to divide the prisoners, as nearly as possible, into distinct groups according to the nature of the crimes of which they have been convicted. The evils, however, consequent on the association of the irreclaimable and hopelessly vicious with those amenable to moral regeneration may be considerably minimized by compelling the prisoners to refrain from conversing on vicious subjects when at work, and by compelling every criminal to take his meals in, and also to sleep in separate cells. In this way, the only time, which would be passed in association, would be, during working hours, within the compartments allotted to the different classes, and, during the period, when each class is being instructed in such rudimentary education as might prove useful in after life.

268. The convict should be informed that, though his term of separate confinement cannot be shortened for a single moment, except from sickness, good conduct, willingness to work, obedience and conformity to the prison rules, would not only entitle him to a certain fixed remission of his sentence, but to a defined proportion of his earnings to be paid to him on liberation. To make the prisoner responsible, to a certain extent, for his own early restoration to freedom, with all its valued rights and enjoyments, and also to money gratuities, is most important in facilitating the management of a prison. The very consciousness of this

responsibility, appeals to one of the strongest impulses of human nature—self-interest. A man is very unlikely to offend against rules which hold forth so much hope and encouragement, when he knows that, by so doing, he is going the right way not only to protract his imprisonment, but to ensure his punishment in the refractory or solitary cells on unleavened bread and rice conjee.

269. The legal recognition of remissions and gratuities, as rewards for good conduct, would diminish the evils of the modified classification permitted by this scheme, facilitate the enforcement of discipline and the training to honesty, industry and reformation by making the criminal feel that, though he is completely at the mercy of the law, he is nevertheless treated like a rational creature with a view to his moral amendment and ultimate advantage. The nineteenth resolution of the Select Committee, appointed in 1850, to inquire into the Rules and Discipline established in Jails and Houses of Correction in England and Wales, &c. state, "That the Committee concurs with some of the most experienced witnesses they have examined, in the opinion that a great majority of convicted prisoners are open to the same good motives and good impulses which influence other human beings, and therefore that a system of encouragement to good conduct, and endeavours to inspire feelings of self-respect, self-reliance, and hopefulness for the future, which have been tried in some of our largest establishments, ought to be adopted, so far as is practicable, without impairing the penal and

deterrent character essential to any system of imprisonment." The Select Committee, appointed to inquire into the provisions and operations of the Act 16 and 17 Vict. c. 99, intituled "An Act to substitute in certain cases other Punishment in lieu of Transportation," stated in their fifth resolution, "That every punishment by penal servitude should include first, a certain fixed period of imprisonment, and hard labour on public works, to be undergone at all events; secondly, a further period, which should be capable of being abridged by the good conduct of the convict himself." And in accordance with the spirit of this resolution, Sir George Grey stated, in his *Circular Memorandum*, dated 27th June, 1857, concerning the Act to amend that of 1853, to the Judges, Chairmen of Quarter Sessions, Recorders, &c., "That while a certain fixed term of sentence shall in all cases be inflicted, a remission of the remaining portion of it shall be granted to those convicts whose conduct in prison is such as not to deprive them of this indulgence." Colonel Jebb states that, "The remissions laid down in this notice (*vide* para. 243, p. 269 ante) will restore the degree of encouragement which has been wanted under the Act of 1853, *and will doubtless* have a favourable effect both at home and in the colonies." The Irish Directors of Prisons consider it of the utmost importance that the remissions should be conditional, or revocable, to all prisoners who have determined to remain in the country. But any prisoner, who may be desirous of leaving the country, will be allowed to do so, provided that nothing has occurred against him, since he left the jail. The

Directors conclude their very able report, for 1857, in the following hopeful words regarding the value of a secondary punishment comprehending, as an important principle, remissions or abridgments of confinement according to the conduct of the prisoners:—"We do feel, however, the utmost confidence in a supplementary stage of prison treatment, which can individualize criminals, before they are discharged—conduce to regulate their future conduct—and, whilst under detention, employ them profitably for the public service. We are not sanguine enough to expect that all criminals so treated will be reformed, far from it; but we believe that many will thus be returned to the community, to follow an honest and industrious course."

270. Statesmen, physicians, clergymen, metaphysicians, and philanthropists might be quoted at great length in favour of the sterling importance of holding the prisoner himself directly responsible for the remission, or otherwise, of a certain defined portion of his secondary confinement. The only question is, whether the abridgment of the sentence should be unconditional or irrevocable, or whether it should be conditional or revocable on reported misconduct of the slightest description. In India, the indulgence might be made to depend upon the conduct of the culprit during his imprisonment. For instance, if all the prisoners undergoing hard labour in classified association by day, and suffering separation, when at meals, and during the night, were divided into three classes—*first*, *second*, and *third*—it might be highly advantageous to grant a stated

and fixed unconditional remission to the constituents of the first class, a conditional remission to all the members of the second class; but no remission whatever to those included in the third or most ill-behaved class.

271. The following statement is intended to illustrate the principles here inculcated. It shows the amount of the sentences that must be undergone in separate confinement, and in classified association with hard labour by day and separation by night; and also the proportions of the sentences that might be remitted *unconditionally to prisoners belonging to the first, and conditionally to those belonging to the second, class, undergoing secondary punishment.*

Sentences.	Separate Confinement.	Labour in Classified Association by Day, and Separation by Night.	Total of Primary and Secondary Punishment to be undergone.	Unconditional Remission to the First, and Conditional Remission to Second Class.
9 months	9 months	—	—	—
1 year	8 „	3 months	11 months.....	1 month.
2 years	8 „	1 year, 2 months ...	1 year, 10 months...	2 months.
3 „	8 „	2 years	2 years, 8 months...	4 „
4 „	8 „	2 years, 8 months...	3 years, 4 months...	8 „
5 „	8 „	3 years, 4 months...	4 years	1 year.
6 „	8 „	4 years, 2 months...	4 years, 10 months .	1 year, 2 months.
7 „	8 „	4 years, 10 months .	5 years, 6 months...	1 year, 6 months.
8 „	8 „	5 years, 6 months...	6 years, 4 months...	1 year, 8 months.
9 „	8 „	6 years, 4 months...	7 years	2 years.
10 „	8 „	7 years	7 years, 8 months...	2 years, 4 months.
12 „	8 „	8 years, 2 months...	8 years, 10 months .	3 years, 2 months.
14 „	8 „	9 years, 4 months...	10 years	4 years.
Life.....	According to the special merits of each case.			

It would be a means of diminishing the chances of contamination, if all prisoners, under sentence of transportation, were either immediately despatched to their destination, or kept in separate confinement prior to embarkation, provided their stay did not exceed nine

months. If they could not be disposed of immediately on the expiration of the nine months' separate imprisonment, they should at all events be kept totally apart from all prisoners, who are undergoing secondary punishment in classified association, and who are eventually to be returned to society.

272. *Education.*—This should be given, so far as may be practicable, to all prisoners suffering separate confinement, and also to those undergoing secondary penance. The criminals should be taught such knowledge as might prove useful to them in after life. The moral improvement of the men would perhaps be effected most rapidly, by making the monitors or teachers read out, and explain to them, in the simplest language, sound moral doctrines. Missionaries might be permitted to comply with the desires of those, who may wish to have the Scriptures explained to them. But all public preaching in heathen jails which would be tantamount, in the eyes of the prisoners, and, through them, of the community, to an attempt at Government proselytism, could not be countenanced, however desirable it might be to do so. The neutrality position of the Government is unfortunately opposed to the practice. The objection would vanish, if the Government were to openly avow a desire that their heathen subjects should cease to worship wood and stone, and become converts to the only true religion — Protestant Christianity. But even in the absence of the great reformatory power of revealed religion, secular education and the training to industrial habits must be admitted to be

very effectual auxiliaries towards permanent reformation. For, it must be granted that regeneration and reversion to honesty and industry can be accomplished by a strict, humane, and encouraging system of discipline, whatever clergymen and religious enthusiasts may say to the contrary.

273. "What is wanted," says Mr. Mayhew, "is to excite in the mind of the prisoner some object to work for, which will endure through life. No man labours for nothing, nor can we expect criminals to do so. Industry is pursued by all, either for the love of what it brings—money, honour, or power, or else for the love of work itself, and if we desire to make criminal offenders exert themselves like the rest of the world, we must convince them that they can obtain as good a living, and a far more honourable and pleasant one, by honest than by dishonest pursuits." Still the able Chaplain of Pentonville (and many others) are opposed to this view, and maintain that, "No human punishment has ever reformed a man from habits of theft to a life of honesty—of vice to virtue; nor can any mode of treating prisoners," continues Mr. Kingsmill, "as yet thought of, however specious, accomplish anything of the kind. Good principles and good motives are the sad wants of criminals; God alone can give these by His Spirit, and the appointed means for this, primarily, is the teaching of his word. 'Wherewithal shall a young man cleanse his way? even by taking heed thereto according to thy word.'"

"Now, in answer to this," writes Mr. Mayhew,

"we say that it is admitted by every one that these same conversions are miracles wrought by the grace of God; and we do not hesitate to declare our opinion that it is not wise, nor is it even religious (betraying as it does an utter infidelity in those natural laws which are as much institutions of the Almighty, as even the Scriptural Commandments themselves), to frame schemes for the reformation of criminals which depend upon miraculous interferences for their success. Almost as natural indeed would it be to return to the superstitions of the dark ages; and, because divine goodness has *occasionally* healed the sick in a marvellous and supernatural manner, therefore to go forth with the priest, in case of any bodily affliction, and pray at some holy shrine, rather than seek the aid of the physician who, by continual study of God's sanitary laws, is enabled to restore to us the health we have lost through some blind breach of His will in that respect. To put faith in the supernatural, and to trust to that for our guide in *natural* things, is simply what is termed '*superstition*,' and surely the enlightened philosophy of the present should teach us that, in acting conformably with natural laws, we are following out God's decrees far more reverently than by reasoning upon supernatural phenomena; since what is beyond nature is beyond reason also, and has no more right to enter into the social matter of prison discipline, than the feeding of the people with manna in the wilderness, should form (instead of the ordinary laws of ploughing, manuring, and sowing) a part of agricultural economy."

"Moreover, we deny that the majority of individuals who abstain from thieving are led to prefer honest to dishonest practices from purely religious motives. Can it be said that the merchant in the city honours his bills for the love of God? Is it not rather to uphold his worldly credit? Do *you*, gentle reader, when you pay your accounts, hand the money over to your tradesmen because the Almighty has cleansed your heart from original sin? And would even the jail chaplain himself continue to labour in his vocation, if there were no salary in connection with the office?

"We do not intend to deny that supernatural conversions of men from wickedness to righteousness *occasionally* take place; but, say we, these are the exceptions rather than the rule of life, and the great mass of mankind is led to pursue an upright course, simply because they find that there is associated with it a greater amount of happiness and comfort, both to themselves, and those who are near and dear to them, than with the opposite practice. To turn the criminal, therefore, to a righteous path, we must be prepared to show him that an honest life is calculated to yield to himself and his relatives more real pleasure than a dishonest one; and so long as we seek, by our present mode of discipline, to make saints of thieves, just so long shall we continue to produce a thousand canting hypocrites to one *real* convert."

APPENDIX.

THE following regulations, issued by Dr. Mouat with the sanction of the Government of Bengal, for the guidance of the officers connected with the various jails under his jurisdiction, are herewith subjoined, in a compact form, for the information of my medical and other readers.

RULES FOR THE MEDICAL MANAGEMENT OF JAILS IN LOWER BENGAL.—(*Jan. 6th*, 1857).

Duties of the Medical Officer.

1. The duty of the Medical Officer in charge of a jail embraces the consideration of every matter connected with the health of the prisoners, their treatment in hospital when sick, the regulation of their diet, clothing, work, and punishment so far as they are concerned in the maintenance of their health, and in general everything connected with the hygiene of the jail and its inmates.

In all these matters he acts in immediate subordination to the Magistrate, or other officer in charge of the jail.

Duties of appointment.

2. The Medical Officer on being appointed shall make himself thoroughly acquainted with the regulations of the prison to which he is attached and its various details.

3. He shall visit every part of the prison once at least in every week, and oftener in times of great sickness, or when epidemic disease exists in the district or station, and shall enter in his journal the result of such inspection, recording any want of cleanliness, drainage, warmth, or ventilation, any bad quality of the provisions, any insufficiency of clothing or bedding, or any other cause which may affect the health of the prisoners. He shall ascertain that the water is pure and wholesome, and that there is an abundant supply for drinking, cooking, and washing.

Visits to the Jail.

He shall especially note all defects of drains, privies, and the conservancy arrangements generally of the jail.

He shall twice each week see every prisoner, whether criminal, civil, or awaiting trial.

The result of all his examinations shall always be recorded in an easy form for reference and inspection.

4. He shall keep a journal in which he shall enter the date of every visit, with any observations connected with the performance of his duty. This journal shall be kept in the jail for the information of the Magistrate and the Inspector of Jails. After each visit of the Surgeon, it shall be sent to the Magistrate for the immediate issue of such orders as that officer may find it necessary to pass.

Journal.

5. The Surgeon shall personally examine every prisoner on the day of his arrival at the jail, or at latest on the following morning.

To examine every prisoner on admission and discharge.

He shall record in a special register in the printed form appended, the name, age, state of health on admission, weight, and any disease of importance to which he may have been subject, of every prisoner. He shall likewise indicate his opinion as to the class of labour on which the prisoner may be employed, with special reference to his state of health on admission.

He shall also record the prisoner's state of health and his weight on discharge, or in the event of his death shall state the date of his decease, and the disease of which he died, with the number in the record of fatal cases, in which detailed particulars regarding his death will be found.

The number of every prisoner in this register shall corre-

spond with his jail number, so as in the case of all fatal cases to render it easy to trace the history, crime, and all particulars connected with the deceased, which it may become necessary to know, or refer to for statistical, or other purposes.

Daily visit to the hospital and the sick.

6. The Civil Surgeon shall at all seasons of the year, as soon after sunrise as possible, see all the prisoners who are sick, or in hospital.

He shall also examine all prisoners who complain of illness, admit those who require it, to hospital, and in the case of those who merely need the application of simple dressings, as in abrasions from fetters or other external treatment, such as does not render it necessary to send them to hospital, shall enter in a special Out-patient Register such variation of the diet or work of the out-patient prisoners as he may consider it necessary to recommend.

These recommendations shall be carried into immediate effect by the Jail Darogah, the register being daily submitted to the Magistrate for his information and orders.

When great sickness prevails, or the severity of cases actually under treatment requires it, the Surgeon shall visit the jail as many times daily as may be necessary for the due and efficient performance of his duties.

7. He shall daily visit the prisoners in separate, or solitary confinement.

To make daily record respecting sick prisoners.

8. He shall keep a regular Hospital Case Book, in which shall be entered day by day an account of the state of every sick prisoner, the name of his disease, and description of the medicines and diet, and any other treatment which he may order for such prisoner.

Special record of fatal cases.

9. An abstract register shall be kept of all fatal cases of disease, in which shall be entered the name, age, caste or religion, profession, pergunnah and zillah, length of time in confinement, crime, work, disease, a brief account of its progress and treatment, and a careful report of the *post-mortem* examination made. A copy of this shall be sent every month to the Inspector of Jails with a transmitting letter, containing any remarks the Medical Officer may wish to offer.

The number of each case in this register shall be recorded

in the appropriate column of the general admission register of the jail, as required by Rule 5.

Special Cholera Register.

10. He shall keep a special record of all cases of cholera, whether sporadic or epidemic, according to the form of register supplied.

A copy of this shall, at the end of every month, be transmitted to the Inspector of Jails.

May increase, diminish, or change diet in particular cases.

11. His attention shall be directed to the scale of diet on which each prisoner is placed, and he shall have a discretionary power to recommend the increase, diminution, or change of the food when required by the constitution and the state of health of any particular prisoner.

He shall have the same discretionary power with reference to the diet of prisoners in the extremes of youth and old age.

It is a rule that diet is not to be made an instrument of punishment, such as can tend to the injury of health, but this will not prevent the Magistrate from putting a refractory prisoner on reduced allowance, or a coarser kind of diet, where the Civil Surgeon does not object to it.

The Civil Surgeon shall daily at his morning visit examine the food provided for the prisoners to see that it is of proper quality and properly cooked.

To give directions in case of infection.

12. He shall give directions in writing for separating prisoners having infectious complaints, or being suspected thereof, for cleansing, disinfecting, and whitewashing any wards or cells occupied by such prisoners, and for washing, disinfecting or destroying any infected apparel or bedding.

To examine prisoners previous to removal.

13. He shall examine every prisoner about to be removed to any other place of confinement, and report as to his being free from malignant, contagious, infectious or other disqualifying distemper, and in a fit state to be removed.

Sick prisoners when to be discharged.

14. No prisoners shall be discharged from prison if labouring under any acute or dangerous disease, nor until, in the opinion of the medical officer, such discharge is safe, unless such prisoner shall require to be discharged.

15. No prisoner shall undergo corporal punishment, except in cases of great emergency, until he is examined by the Surgeon, and certified by him to be in a fit state to receive such punishment.

Sanction of the Surgeon necessary for corporal punishment.

16. Within one week, after the termination of each month, the Civil Surgeon shall submit to the Magistrate for his countersignature and remarks, and immediate transmission to the Inspector of Jails, a complete Monthly Return of the sickness and mortality in the jail under his charge.

Periodical returns of sickness and mortality.

Those returns shall be drawn up in the form now required by the Annual Report submitted by the Medical Board (which will be forwarded, as usual, to that authority through the prescribed channel), and shall embrace every circumstance of interest or importance connected with the jail during the month.

The annual return shall be an abstract of the monthly reports.

A fair copy of all such reports shall form part of the regular records of the jail.

17. The annual returns of sickness and mortality in jails will be printed by the Inspector of Jails, and appended to his General Report.

Annual returns shall be printed by the Inspector of Jails.

Rules for the Subordinate Medical Staff and Hospital Attendants of Jails in Lower Bengal. —(12*th August*, 1857.)

Sub-Assistant Surgeon.

1. In every civil station in which there is a Sub-Assistant Surgeon, he shall be available for the performance of such duties in the jail and jail hospital as the Civil Surgeon may demit to him, provided such duties do not interfere with his proper functions at the Local Dispensary or Charity Hospital.

2. He shall assist the Civil Surgeon in the preparation of the Surgeon's register of prisoners; in the examination of the food, clothing, quarters, and persons of the convicts; in the

making and drawing up of reports of *post-mortem* examinations; in seeing that the medicines ordered are carefully prepared and administered by the Native Doctors; in seeing and prescribing for the convict out-patients, and such like professional duties.

Native Doctors.

1. The duty of the Native Doctor is to attend to all orders of the Surgeon; to prepare or have prepared under his immediate personal superintendence all medicines ordered; to see that these medicines are given in the doses and at the times directed; to keep a brief record of every case, and of the diet, &c., ordered by the Surgeon at his visits; to be responsible for the safe custody of the medicines, instruments, and other property of the Government in the hospital; to prepare daily a diet roll of the sick in hospital, that their rations may be duly supplied; and to be responsible generally under the immediate orders of the Civil Surgeon, for the cleanliness, good order, and discipline of the hospital.

2. When there are two Native Doctors, one shall be on duty every night in the hospital; and when there is only one Native Doctor, he shall take that duty alternately with the compounder.

3. The purchase of bazaar medicines shall be entrusted to the Native Doctor on the responsibility of the Civil Surgeon; but the Native Doctor shall, in no case, be entrusted with the dieting of the sick, which shall be supplied by the same authority as the food of all other prisoners.

4. Native Doctors shall reside in such proximity to the jail, as to be available for duty at all times without delay.

5. In all matters connected with their duty in the jail and hospital, they shall be under the immediate authority and orders of the Civil Surgeon.

Compounders and Dressers.

Compounders and Dressers, when allowed, shall perform such duties in connection with the sick, as the Civil Surgeon

may entrust to them. When qualified to have charge of the sick, they shall take the night duty of the hospital alternately with the Native Doctor, and shall at all times reside in the immediate vicinity of the jail.

Hospital Servants and Attendants.

1. The hospital servants shall be under the immediate orders of the Civil Surgeon, and shall be present at such times and perform such duties as he may require from them, consistent with their position in the establishment.

2. The Magistrate shall place at the disposal of the Civil Surgeon such well-conducted prisoners as can safely be entrusted with such duties, to wait upon the sick.

3. Except in very urgent and bed-ridden cases, the proportion of such attendants shall not exceed one to ten patients: when more are needed, a special application must be made to the Magistrate, stating the grounds on which they are deemed requisite.

4. In no case must a respectable prisoner be permitted to be told off for hospital duty, that he may thereby escape other labour in the jail.

5. Any Native Doctor or other person attached to the subordinate hospital establishment, who shall be convicted of taking a bribe from a convict, or of conniving at the introduction of forbidden indulgences into the jail or hospital, shall be liable to summary dismissal by the Magistrate.

Rules for Convicts Transported to Arracan.

Classification.

The whole of the transported convicts to be divided into six classes, as follows:—

First Class.—Trustworthy convicts, who have passed through the probationary classes, and possessing the means, provide for themselves.

Second Class.—Convict peons and convicts, female as well as male, employed in hospitals, public offices, and as work overseers.

Third Class.—Convicts employed as ward khillaburdars, and in the roads and public works of the station.

Fourth Class.—Convicts newly arrived and those degraded from the higher classes or promoted from the fifth class.

Fifth Class.—Convicts degraded from the higher classes, such as require more than ordinary vigilance to prevent escape, or regarding whom special instructions have been received from the Presidency whence they have been transported.

Sixth Class.—Females not included in the second class, invalids and superannuated convicts.

REGULATIONS.

First Class.—1. No convict to be admitted to this class unless he has served six years in the Province, and can give security, to be approved by the Commissioner of Arracan, for his good conduct.

2. On admission he is to be apprised that the privileges granted to him will be forfeited on proof of misconduct; that he is still under the sentence of the law; that any attempt to quit the Island of Ramree will subject him to the same penalties as he would have incurred if the indulgence in question had not been conferred upon him; and that he must appear at muster on the 1st and 15th of every month, and at any other time if required by the Commissioner of the Province, the Inspector of Jails, or the officer in charge of the Khyouk Phyoo Jail to do so.

Second Class.—1. The convicts of this class are eligible for employment as work overseers, orderlies, and peons, or in the public offices.

2. The work overseers shall be selected from the best conducted and most trustworthy of the other convicts mentioned above, after an approved probation of at least two years as peon or orderly, or employé in a public officer. Two years of

uninterrupted good conduct, as a work overseer, shall entitle the convict to seek admission to the first class.

3. Of the second class, the work overseers alone may sleep out of the jail in lines immediately adjoining it, and with the exception of the hospital attendants, who should sleep in hospital, the remainder of the class shall sleep in a ward of the prison specially appropriated to them, the khillaburdar of the ward being the convict first promoted to the office of overseer.

4. Convicts are to be promoted to this class under the following restrictions, viz., if transported for seven years, after four years of continuous service with good character in the third class; if banished for fourteen years, after six years of similar approved service; and if for life, after ten years of such service in the next lower class.

5. Work overseers will receive six rupees *per mensem* for their clothing and maintenance; and all other convicts of this class, five rupees a month, to be expended in food and clothing at their option, none of them drawing rations from the jail, or wearing the prison clothing.

When sick they shall be treated in the jail hospital without any deduction from their salary, unless the sickness extends beyond one month, when the convicts appointed to act for them shall draw one-half of the allowance.

6. The work overseer shall be entrusted with the supervision of the work of any gang which may be assigned to him; shall see that the allotted task is well and fully executed; and shall report to the jailer, at the end of each day's work, any breaches of discipline, or failure in the performance of any portion of the assigned task in any member of his gang. He shall also be held responsible that no improper indulgences are procured by the prisoners under his charge.

7. The convicts of this class to be exempt from fetters, but to wear a small ankle ring of iron as a badge of recognition.

Third Class.—1. The best behaved of this class in each ward, and the one next for promotion to the second class, to be khillaburdar of the ward; to see that all the prison rules are strictly obeyed by the inmates of his ward after they are locked up at night; and to report to the jailer, on the opening of the

ward in the morning, any irregularities or breaches of discipline that may have occurred.

2. Two years of approved service in the office of khillaburdar to entitle a convict to seek admission to the second class.

3. All convicts of this class to be worked with fetters, but to wear two light ankle rings as a mark of distinction, with the exception of the khillaburdars, who will wear one ring with a brass rivet.

4. The work of the convicts of this class to be nine hours daily, viz., from 6 to 11 A.M., and from 1 to 5 P.M., or such other hours as the authorities may fix according to season.

5. Convicts transported for seven years to be admitted into this class after one of approved penal servitude; convicts of fourteen years' sentence after two years; and life convicts after four years.

6. Convicts of this class will receive the regular ration of labouring prisoners. The khillaburdars will receive in addition one pice worth daily of extra condiments.

Fourth Class.—1. All newly transported convicts and those regarding whom special instructions have been sent, will be placed at once in this class, and are to serve the time specified in Section 5 of Regulation for the third class before they are promoted.

2. They are to wear the regulated prison-dress, to receive full labouring prisoner's diet, and to work in light double ring fetters for at least nine hours daily, viz. from 6 to 11 A.M. and 1 to 5 P.M., or such other hours of similar extent as the local authorities may fix.

3. All convicts degraded from any of the higher classes into this, or promoted from the fifth class, shall serve with uninterrupted good conduct for at least twelve months before they are again promoted.

Fifth Class.—1. The convicts of this class to be worked in heavy irons for at least nine hours daily, as mentioned in Section 2 of Rules for the fourth class.

2. Convicts of this class will wear a distinctive prison dress of red colour, and will receive the ordinary rations of labouring prisoners.

3. They will never leave the jail, except when taken out to work.

4. Convicts degraded from the fourth class must serve six months before they can be reinstated in that class, and if from other classes they must serve a further period of two years before they can be promoted to the third class.

Sixth Class.—1. All convicts incapacitated by infirmity from hard labour, but who are still capable of performing light work, will be employed in cleaning the jail and hospital, weeding, removing dead leaves and decayed vegetation, and similar tasks at or near the jail, or they may be occupied in spinning thread and any other available employment requiring little physical exertion.

2. The blind and superannuated to be exempted from all work.

3. No convict to be admitted to this class until examined and declared unfit for hard labour or labour of any kind by the medical officer in charge of the jail and convict establishment at Ramree. As regards the success of this system, Dr. Mouat makes the following observations in his special report upon the jail at Ramree for the year 1858-59 :—

"*The Conduct of Prisoners* (5) has been excellent since the introduction of the ticket-of-leave and convict Burkundauze systems, which render them very chary of committing any offence that would throw them back, or peril their chance of sharing in the benefits now open to them. The eight first-class convicts on ticket-of-leave behaved remarkably well. Five of them were employed as domestic servants, and of the other three one officiates at a temple recently built by the Hindus, and the two others as Moulvies in the mosque. Of the nine in the 1st section of the second class, one died, the rest were well-conducted, with one exception, who was reduced for misconduct. Of the 27 in the second division of this class, all but four were well-conducted. Two of them were reduced for sleeping at their posts as sentries, and the two others for taking forbidden articles into the jail. So far," concludes Dr. Mouat, "as it has gone, the result is satisfactory. To be successful, it must be most carefully watched by the Magistrate."

Regulations for Convict Ships.—(No. 1199.)

To E. H. Lushington, Esq., Officiating Assistant Secretary, Government of Bengal.

Sir,—With reference to para. 4 of your letter, No. 807, of 3rd instant, and quoted in the margin[1] for readier reference, I have the honour to submit, for the approval of the Honourable the Lieutenant-Governor, the accompanying regulations for the management of transported convicts in transit to penal settlements.

2. In addition to these rules, I am of opinion that a Medical Officer should accompany the Marine Surveyors when they examine ships for the conveyance of convicts, and that he should certify as to the fitness of the vessel in regard to its sanitary arrangements.

3. The decks of these ships are so lumbered as, in general, to render it impossible for the convicts to visit the upper deck in sufficient numbers.

4. In the gun deck, I am of opinion that scuppers should always exist to admit of that deck being completely washed and scrubbed, without leaving it damp for many hours.

5. At present there is no outlet for the water; merely swabbing it up is a very tedious process, and leaves it damp for several hours from the non-access of sun and air.

6. The roll of convicts handed to the Commander of the ship should contain, in a separate column, the report of the Civil Surgeon of the 24-Pergunnahs, as to the state of the health of the prisoners at the time of embarkation.

7. The European Sergeant and Native Doctor should be furnished with suitable books, paged for each day of the probable duration of the voyage, so as to be written up without difficulty, and in a form suitable for examination.

I have, &c.,

F. J. Mouat,

Inspector General, Lower Provinces.

[1] Para. 4. With reference to paras. 24 to 26 of your letter, I am desired to request that you will prepare a set of rules for the management of convicts on board ships engaged to carry them to the penal settlements, and forward the same for the Lieutenant-Governor's approval.

European Sergeant.

1. The European Sergeant in charge of the guard shall keep a brief diary, noting the quantity and quality of the food and water issued, the state of the convicts and their quarters, and the complaints made by any of the party under his charge.

2. He shall daily be present at the opening and closing of the jail wards, and at the issue of provisions and water, and shall see that the quarters of the convicts are properly cleansed, that their clothes and persons are clean, and that the sick have been duly visited by the Native Doctor.

3. He shall at once bring all complaints which are beyond his power to settle, to the notice of the Commander of the ship, and shall note in his diary the nature of the complaint and the steps taken in consequence.

4. This diary shall be made over to the Superintendent of Convicts at the station to which the prisoners are sent, in order that, should an investigation of any occurrence during the voyage be necessary, it may be made at once, and a report of the result be forwarded to the Government at Calcutta. The said Superintendent shall countersign the diary as seen and examined by him.

5. It shall likewise be sent to the office of the Inspector of Jails in Calcutta, on the return of the guard, for examination.

Native Officer.[1]

1. The Native Officer in charge of convicts shall be present daily at the opening and closing of the wards, shall superintend the issue of all provisions and water, shall see that the convicts obtain their food at proper hours, shall patiently attend to all complaints made by the convicts or guard, and shall report them at once to the Commander of the vessel, who shall keep a special record of them, and of the orders issued by him in consequence.

2. This record shall be made over to the Superintendent of

[1] When there is no European Sergeant on board.

the Convict Settlement on arrival at the place of destination, and shall be forwarded by that officer to the Government of Bengal, with such remarks as he may deem necessary or called for.

3. Should any of the occurrences contained in the above-mentioned record need investigation, such investigation shall at once be made by the Superintendent, and the result reported for the information and order of the Government of Bengal.

Native Officer of the Guard.

1. The Native Officer of the guard shall be present daily at the opening and closing of the wards, and at the distribution of provisions and water, and shall see that the convicts bathe, that their clothes and persons are clean, that the sick are immediately attended to, and that all complaints are brought to the notice of the European Sergeant.

2. He shall see to the posting of sentries, to the food of the convicts being properly cooked and distributed at proper hours, and to all complaints of sickness at night being at once reported to the Native Doctor.

Convicts.

1. The doors of the convict cells shall be opened every morning at daybreak, and the convicts be allowed to mount to the deck in such numbers as can safely be permitted.

2. Every convict shall be compelled in the hot weather to bathe daily before going below, the water for bathing being pumped up by the convicts themselves, the tubs and buckets necessary being supplied by the ship.

3. The cells shall be daily emptied, one at a time, and carefully swabbed and dried. Twice in every week they should be thoroughly holy-stoned and scrubbed, weather permitting.

4. Twice in each week the convicts shall be compelled to wash their clothes, a supply of sajimati being taken on board to enable them to do so.

5. In each ward the most respectable and well-behaved convict should be appointed khillaburdar, to see that the prisoners behave properly, to bring to the notice of the European Sergeant, at his daily visits, any breach of propriety on the part of the prisoners, to see that notice is at once given to the guard on duty of sickness, and of the necessity of emptying the filth buckets, and such like matters.

6. The European Sergeant will keep a special record of the conduct of the khillaburdars for report to the Superintendent of the Convict Establishment on arrival at the penal settlement.

7. In the event of their being well-conducted throughout, it will give them a prior claim over the other convicts of the same batch, to such indulgences as the rules of the penal settlement allow to well-behaved convicts.

8. The meals of the convicts shall be served out at regulated hours, and no deviation, weather permitting, be allowed from those hours.

9. Each convict shall on embarkation be supplied with the articles noted in the margin; blankets shall be issued in the cold weather, and extra clothing and bedding in the proportion of ten suits for every hundred men, for the use of the sick only.

A brass kutora, a plate, two complete suits of clothes, a tat bed and pillow.

Native Doctor.

1. The Native Doctor shall visit the sick regularly at daybreak and half an hour before sunset.

He shall in addition to this see all new cases the moment they are reported sick, and shall visit dangerous cases as often in the twenty-four hours as may be necessary.

2. He shall keep a journal of every case, of his treatment, and of all circumstances connected with the health generally of the convicts, which he may consider it necessary to record.

3. He shall visit every ward daily to see that it is clean and wholesome, and shall at once bring to the notice of the European Sergeant every circumstance connected with the health of the convicts that may require attention.

4. His journal shall be transmitted to the Medical Board on his return to the Presidency.

5. Upon reaching the place of destination, he shall accompany the sick on shore, and explain to the Medical Officer in charge of the convict establishment the particulars of every case that he makes over to him.

F. J. MOUAT,
Inspector of Jails, Lower Provinces.

RULES FOR PRISONERS IN TRANSIT.—(*Circular, No.* 45.)

To all Magistrates.

Dated Fort William, 9th May, 1856.

SIR,—It having recently come to the knowledge of the Government that prisoners transmitted from one jail to another are occasionally subjected to unnecessary suffering, I am directed to issue the following instructions for their safe custody and health in transit:—

1. Every prisoner before being sent on a march must be supplied with a blanket, a suit of jail clothing, and such drinking and cooking vessels as are necessary.

2. No fetters, bonds or ligatures, other than are absolutely necessary to prevent escape, should be employed; and immediately that convicts are again safely lodged in jail, all hand chains should be removed.

3. While on the march, hand-chains may be used; and, if there is an armed guard sufficient to prevent any forcible attempt to escape, it would be better simply to couple prisoners together, than to fasten them all to a single chain at night—a proceeding which ought never to be necessary.

4. Aged and sick prisoners should not be transferred at unhealthy seasons. In the event of its being absolutely necessary, suitable means must be provided to carry those who are unable to walk, and to take care that the carriage so provided is not made use of by the guards. Natives generally are so

indifferent to sickness and suffering that do not affect themselves, and have so little sympathy with the afflictions of others, as to render it necessary to adopt the most stringent measures to prevent any abuse of the means provided for the relief of those who really require such aid.

5. In every pal or hut in which prisoners on the line of march are confined at night, a closed lantern should be suspended.

6. Sick prisoners must always travel separately, and not be attached to any other convicts while they remain sick.

7. In all practicable cases water is to be preferred to land carriage.

8. All particulars connected with the safe custody and health of prisoners in transit must be entered by the despatching officer in a certificate to be given to the head man of the guard escorting them. This certificate must be countersigned by every Magistrate and Deputy Magistrate through whose station the prisoners pass, *en route*, and should eventually be returned to the despatching, with the signature of the Magistrate to whose jail the prisoners have been consigned.

I have, &c.,

F. J. MOUAT,

Inspector of Jails, Lower Provinces.

RULES FOR THE DISPOSAL OF THE CHILDREN OF CONVICT MOTHERS.—(*2nd October*, 1856.)

1. In all cases of female convicts who may, at the time of their conviction, have children at the breast, or to whom children may be born whilst in confinement, such children need not be separated from their mothers until they have attained the full age of two years. When a child arrives at two years of age, it must at once be removed from the jail.

2. No child which has attained the age of two, at the time of conviction of the mother, is, on any consideration, to be permitted to become an inmate of the jail.

3. In all the cases above-mentioned, the Magistrate must cause diligent inquiry to be instituted regarding the relatives and near connections of the convicts, in order that the children may be made over to them during the incarceration of the mother.

4. Should the relations of the children be entirely destitute, and unable to support them, or should the Magistrate fail to discover any persons sufficiently near of kin to take charge of them, the Magistrate will select trustworthy persons to whom he will consign them, and see that they are brought up to habits of industry and labour.

Shaving of Prisoners in Bengal Jails.— (*2nd October*, 1856.)

As a general practice it is desirable that every criminal prisoner who is sentenced to imprisonment with labour, should, on final confirmation of the sentence, or expiration of the period of appeal, without an appeal being preferred, have his head and face close shaved, and be subsequently shaved once every fifteen days, by prisoners set apart for this duty. The Hindu will retain the Sika. The beard and moustaches of all prisoners will be close trimmed. But Magistrates are authorized to exempt from this rule those prisoners to whom they think that such a proceeding would be justly offensive or degrading. Seikhs in the Jails of Umballa, Loodiana, and Ferozepore are exempted from this rule, and must be similarly exempted wherever they may be imprisoned.[1]

Rules for Military Guards in Jails.— (*26th October*, 1858.)

1. The duty of the Military Guard is to prevent the escape of prisoners, to resist by force all attempts to break into, or out of,

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[1] *Inspector-General's Report*, for 1858–59.

any part of the Jail, and to aid at all times in the maintenance of order and discipline.

2. All Sentries shall be posted, and their places assigned to them by the Magistrate, through the Jailer (or Sergeant of the Guard).

3. The Sentries at the gate of the Jail shall mount guard with loaded arms, and a stand of arms shall be kept loaded day and night in the Guard Room at the Main Gate, to be ready for immediate use in case of necessity, but only to be used under the personal direction of the Magistrate, or in case of extreme urgency.

The Guard accompanying official visitors shall always carry loaded arms, unless otherwise desired on any particular occasion.

4. After the prisoners have been locked up for the night, the keys of the wards and cells shall be lodged with the Jailer (or Sergeant of the Guard).

The Non-Commissioned Officer on duty shall not permit any one to unlock the outer gate during the night, excepting the Jailer, the Magistrate, or any official visitor entering the prison on duty, between sunset and sunrise.

5. In the event of any attempt to break Jail, or any other disturbance occurring, the Guards shall immediately be placed under arms by the Non-Commissioned Officer on duty, who shall at once despatch a messenger to the Jailer, the Magistrate, and his own Officer, should there be one at the Station. All Sentries are in such cases to be loaded, but the Guard is not to act until the arrival of the Jailer, or Magistrate, unless to rescue and save the life of any Jail Official towards whom the prisoners are actually committing violence, or to drive back the prisoners in the event of their forcing the gate.

6. If, however, the prisoners should actually assault the Jail Officers, or attempt to break out of any particular ward or yard, and the European Officers of the Jail consider that it would be dangerous to delay, and call upon him to act, the Sergeant of the Military Guard shall detach a party to the spot under charge of a Sergeant, or Corporal, with orders to rescue the Officers and

prevent the prisoners from breaking out. The Sergeant, or Corporal, or one of the Jail Officers, on arriving at the scene of disturbance, shall give notice to the prisoners in a loud tone of voice, that if they do not immediately submit themselves they shall be fired upon. This warning shall (if circumstances admit of delay) be repeated thrice, and if the Sergeant, or Corporal, then see no other means of quelling the disturbance, he shall open a fire upon the refractory prisoners, which he shall be careful to stop the moment they fly or submit. On the arrival of the Magistrate or Military Officer, the Military Guard shall act under their orders, or under those of either of them.

7. As the exact place of assembly of the Guards to quell disturbances will vary with the construction of particular Jails, it will in each Jail be made known to the Guard by the Magistrate.

8. The corporal and privates on duty at the Main Gate shall never be absent from the Guard Room at that gate on any pretence whatsoever.

9. The reliefs of Sentries shall be always marched off by a Non-Commissioned Officer, who shall prevent any disorderly conduct on the part of his men, and shall be held responsible that the necessary orders are explained to, and understood by, every Sentry before he is posted.

10. On the approach of the Magistrate, the Inspector-General of Prisons, the Judge of the Station, or any superior Officer connected with the Jail, the Sentry is to stand ready, facing to his proper front, and to present arms when any such Officer passes in front of him.

11. Sentries are to enforce firmly the orders given to them, without distinction of persons.

12. It is the duty of all Sentries to protect as far as may be in their power, the stores and property belonging to Government, although not actually delivered to their charge, and to prevent, not merely the escape of the prisoners, but all unauthorized communication with them.

13. The Sentries are strictly prohibited from holding any intercourse with the prisoners either by words or signs, and also

from supplying any prisoner with money, tobacco, liquor, instruments, letters, or other prohibited articles.

14. The duties of the Military Guard are to be written in English and the Vernacular language of the District or Province, and hung up in the Guard Room; and Non-Commissioned Officers, posting Sentries, will be most particular in observing that the Sentry relieved gives distinct and proper instructions to the relief.

Subjoined are the "RULES FOR THE MANAGEMENT OF PUBLIC JAILS," in the Madras Presidency, extracted from Mr. Rhode's *Report*, for 1856–57.

I. JAILS—UNDER WHOSE CHARGE TO BE PLACED.

1. The general superintendence and control of the jails in the Madras Presidency is vested in the "Inspector of Prisons," who is directed to inquire into, and regulate all matters connected with the classification, diet, and clothing of prisoners, their labour and discipline, the security, and sanitary condition, and ventilation of the prisons, as well as to arrange all matters connected with their guarding; he is further instructed to check all accounts of expenditure connected with the prisoners' food and clothing, the repairs or construction of prison buildings, and salaries of establishments. The Inspector is to be consulted in all matters relating to repairs, or alterations, or additions to jail buildings; he is authorized to pass such estimates as do not exceed 500 rupees, and to submit to Government all above that sum.

2. The Inspector is to be the general channel of communication with Government on all matters connected with prisons and prison discipline.

3. By Act No. VIII. of 1856, and under the authority of the Governor in Council, May 13th, 1856, the powers in respect to the control of prisons vested in the Foujdaree Udalut or Sessions Judges by previous enactments are transferred to the Inspector of Prisons.

4. When the Subordinate Criminal Court, at the Station of a Zillah Court, is constituted according to Regulation VIII. of 1827, the Zillah Jail shall be under the charge of the Session Judge.

5. When the Subordinate Criminal Court, at the Station of the Zillah Court, is constituted according to Regulation II. of

1827, the Zillah Jail shall be under the charge of the Subordinate Criminal Court.

6. When the Court of a Principal Sudder Ameen, or Sudder Ameen, is established at a place remote from the station of the Zillah Court, the jail shall be under the charge of the Principal Sudder Ameen, or Sudder Ameen.

II. Officers in Charge — their Duties in regard to the Jail, and the Prisoners confined therein.

1. Officers in charge of Jails shall be guided by the Rules which have been, or may be prescribed by the Governor in Council, or under his authority by the Inspector of Prisons.

2. Officers, who have charge of prisoners employed upon the public roads, or other public works, shall, in like manner, be guided by any Rules, for the treatment of such prisoners, which have been, or may be hereafter, transmitted to them by the Inspector of Prisons, with the sanction of Government.

3. Officers in charge of Jails, shall visit the jail at least once in every week, and shall redress all well-founded complaints; they shall be particularly attentive to the health and cleanliness of the prisoners, and shall see that the Surgeon of the station attends and administers to the sick.

4. The visits of the officers in charge, shall occasionally be made without previous notice to subordinate officers of the jail. In addition to the periodical visits to the jail itself, the officer in charge will occasionally visit the gangs at work and notice any irregularities.

5. Officers in charge shall prescribe a set of written subsidiary Rules for the internal economy of the jail.

6. A written or printed copy of all Rules respecting the conduct of guards and prisoners shall be affixed in the several wards, in the guard rooms, and other convenient places within the jail.

7. All orders for receiving prisoners into the jail, and for their final discharge, shall be signed by the officer in charge, and addressed to the Jailer in the language with which he is acquainted.

8. Officers, in charge of Jails, shall invariably cause each

prisoner to be brought before them as soon as he arrives at the station, or, if from any cause this is impracticable, within twelve hours afterwards, when any complaint he may make of maltreatment by the Police, shall be recorded. Prisoners are to be received on Sundays as on other days.

9. Officers, in charge of Jails, shall keep such Registers, &c., as may be required by the Inspector of Prisons—the entries in which shall be made by the Jailer (when competent).

10. Officers, in charge of Jails, will revise all entries in Registers, and from time to time certify by their initials, below the last entry, that such revision has been so far made.

11. Officers, in charge of Jails, shall submit to the Inspector such returns as he may direct.

12. When prisoners in Jail are desirous of petitioning the Foujdaree Udalut, the Session Judge or Inspector of Prisons, the officer in charge shall receive and forward the petition, without a separate letter. An indorsement is invariably to be made on each petition, containing the following particulars, viz., the name of the petitioner; the date on which it was presented; the date on which it was forwarded and its number, which will be according to the order in time of its presentation, and beneath, the signature of the officer in charge.

13. Civil Judges shall submit to the Sudder Udalut, at the close of each half year, a statement of Civil Debtors, according to the form prescribed, and which, in respect of Debtors under confinement, by order either of the Revenue authorities, the Subordinate Judges or Principal Sudder Ameens, should be prepared in the Courts of the Civil Judges from information furnished to those functionaries by the Subordinate Judges, wherever the jail may be in charge of the Subordinate Judges; and from information procured from their own records, or the Principal Sudder Ameens' Courts, where the Zillah jail may be under the charge of the Zillah Judge.

14. Wherever the Court of a Principal Sudder Ameen, or Sudder Ameen may be at a distance from the Zillah station, and Debtors are under restraint in other than the Zillah jail, the necessary statement should be forwarded to the Zillah Judge by the officer having charge of the jail, in view to its being submitted to the Sudder Udalut in the usual course.

Jailers.

1. The selection of officers for the duty of Jailer is vested in the officer in charge, but no nomination will be confirmed till approved by the Inspector of Prisons.

2. No person shall be appointed to the duty of Jailer, at a Zillah jail, who cannot read and write English so as to be able to understand and make returns in his own writing to all warrants and orders, to keep the jail Register, and keep or check accounts of expenditure.

3. The preference should in all cases be given to Invalid or Pensioned European Non-Commissioned Officers when qualified.

4. Jailers of Sudder Ameens' and Magistrates' jails, where such are allowed, are not required to know English, and for their guidance, a translation of every warrant addressed to them shall be appended in the Native language of the district, but no person is to be employed as Jailer, who cannot read and write for himself.

5. Naib Jailers or Jemadars, at the Zillah station, shall not be selected, unless able to read and write freely.

6. The respective duties of Jailer and Jemadar shall be laid down in writing by the officer in charge, according to their respective capabilities, but in all cases the Jailer is responsible for the maintenance of order and discipline, and due enforcement of all orders within the precincts of the jail, and the Naib or Jemadar, unless exempted from duty within the jail, is under the orders of the Jailer.

7. In no case is either the Jailer or Jemadar, or any guard on the jail establishment, to have anything to do with providing for the food or clothing of the prisoners, either by contract or otherwise, and any such officer found to have profited in any way by such supply, either as commission or by being in collusion with the purveyor or contractor, will be dismissed or otherwise dealt with as the officer in charge, or the Inspector, may think fit.

8. The Jailer will himself receive every prisoner committed, make a record of the warrant, register the prisoner, and deliver him into the charge of the guard or warder, placing him in the proper ward; he will give instructions for placing irons,

and himself see that all orders he may give are properly carried out.

9. The Jailer will keep all Registers in his own hand-writing, unless for especial reasons, the officer in charge may see fit to appoint others to assist him in this duty.

10. The Jailer will himself muster all prisoners morning and evening; he will attend the locking and unlocking of the wards; he will see that the prisoners, told off for labour in the gangs, are properly appointed; he will at least one day in each week cause every individual of a gang returning to jail to be searched, and will generally exercise such supervision as shall prevent abuses of any kind.

11. The Jailer will reside in the house appointed for him in the vicinity of the prison, from which he will not proceed to any distance, except in accordance with previous arrangements, sanctioned by the officer in charge, in which case the Jemadar or Naib shall remain on the premises. The Jailer is not to depute the Naib to perform his appointed duties, except by the written orders of the officer in charge.

12. The Jailer will himself superintend all corporal punishments, the medical subordinate being also present.

13. No prisoner is to be moved from one ward of a jail to another, without the cognizance and orders of the Jailer, a note of which he shall immediately make in his day-book.

14. The Jailer is enjoined to bring every irregularity or suspicious occurrence to the notice of the officer in charge, notice of the same to be recorded by him in the day-book.

15. Jailers are prohibited from employing prisoners of any description in their private houses, or offices attached to them; but officers in charge may allow a party of prisoners, two-thirds of whose sentence has expired, for work in the garden from which the Jailer may be supplied with vegetables for his own consumption.

16. Jailers and other officers are prohibited from mal-treating any prisoner.

17. Jailers shall at least once a week examine the bedding of the prisoners left in the wards, lest any forbidden thing should be concealed.

Rules for Admission, etc., of Prisoners.

1. Prisoners, on first admission into jail, shall be registered in the book kept for the purpose; any who are filthy in their persons or clothes shall be compelled to wash before being admitted into the jail wards; all prisoners admitted shall be searched; all unnecessary articles of clothing, all jewels, cooking utensils, &c., shall be taken from them, registered and deposited in the proper place; but it is not intended that prisoners admitted for trial shall be deprived of the use of their own clothes, chemboo, and such things as may be ordinarily deemed necessaries by persons of their class. Mats shall be furnished to prisoners under trial, but jail clothing will not be issued, unless in case of necessity; nor is any committed prisoner to be admitted till examined by the Surgeon or Dresser; in the latter case the prisoner shall be brought before the Surgeon on his next visit to the jail or jail hospital.

2. Prisoners under trial shall not only be confined, separated from convicts, but shall be precluded from any intercourse with them.

3. Prisoners under trial shall be, to the extent the jail allows, separated, and care shall be taken that the feelings of such persons shall be offended as little as the case allows by association with other prisoners; in short, that the jail, properly so called, set apart for prisoners under trial, is not made a place of punishment to such prisoners.

4. Prisoners, on conviction, sentenced to imprisonment, shall be deprived of all property they may have about them, which shall, except in the case of perishable articles, belonging to prisoners sentenced for long periods, be laid up in store and restored to them at their release, or, if they desire it, be made over to their family. The prisoner shall be furnished with prison clothing, a mat, earthen pots, cumbly, and cumbly hood, according to rule, from the jail stores. Any private property, afterwards found on any convict, beyond that supplied by the State, will be forfeited to Government. Perishable articles may be sold under the authority of the officer in charge of the jail, and the value paid to the convict, on his release, or to his

family, if he desires it. Worthless articles, especially such as might convey disease, as filthy rags, &c., should be burnt.

5. All stores, food, or clothing, issued for use in the jail, remain the property of Government; and any peon or other person stealing or receiving such property, under any pretence whatever, should be dealt with under the General Regulation.

6. Prisoners held to security will, on admission, be deprived of their personal property, unless special orders to the contrary are issued by the officer in charge of the jail.

7. In regard to the treatment of State prisoners, the officer in charge of a jail will issue distinct orders in each case, appointing the apartment for use, and giving directions for custody, as well as for provisions, clothing, licence to go abroad, to communicate with other persons by letter or otherwise, &c., in accordance with the Regulations, and the warrants, and instructions issued under the authority of Government in each case.

8. A General Register will be kept of all prisoners admitted, according to forms supplied; in this will be entered the name, &c., of all prisoners, except debtors, for whom a separate register will be kept.

9. A Register of Convicts will be kept independently of the General Register.

10. The Court of Foujdaree Udalut having directed the use of separate warrants in the case of each prisoner, all such warrants shall be docketed, on receipt, with the name of the zillah, number of the prisoner in the General Register, his name, crime, date of warrant, and date of release ordered. Should the prisoner be at any time further sentenced for escape, &c., the same should be noted by a second entry on the endorsement, with note of the number of such further warrant. All such original warrants will accompany a prisoner in case of transfer; the Jailer will endorse on the warrant any particulars in respect to its enforcement, as collection of fines, infliction of stripes, release by discharge or death, &c.; corresponding entries will be made in the Register.

11. The warrant, when the terms of the sentence have been fulfilled, should in all cases be returned, with an endorsement certifying the sentence having been carried out, under the hand of the Jailer, countersigned by the officer in charge, to the

officers by whom it is given; that is, to the Criminal Judge, or Sessions Judge, or Magistrate. To avoid confusion, warrants should not be returned direct to the subordinate judicial or magisterial officers who have not an independent charge. A note of the return of the warrant will be entered in the Convict Register.

12. The entries in the Register, acknowledgment of and returns to warrants, and, generally, all entries shall be made by the Jailer in person. The Jailer is responsible that the terms of the warrant are strictly enforced.

13. Although the officer in charge of the jail may unquestionably communicate to the Magistrate such observations as he may deem necessary, on the subject of the warrant forwarded with a prisoner to be confined in the jail, he is not permitted to exercise any discretion as to the disposal of the prisoner; but whenever it may appear to him that a sentence passed by the Magistrate is not authorized by the Regulations, it shall be his duty to make a reference on the subject to the Session Court.

Fetters.

1. The fetter in use shall be of one pattern, namely, 2 feet of small link chain with a link, 3 inches long at each end, to which the leg rings are attached. The leg rings shall fit close over the leather sock above the ankle, and shall not be large enough, in any case, to be drawn up over the calf of the leg. One end of the long link shall be attached by a leather thong to the top of the leather sock, while the lower part is secured to the leg by the shackle. A small strap is to be passed through the middle link, to which a small lanyard may be attached to support the chain, while the prisoner is moving. The use of the long links is that the chain sliding up and down should not cause the fetter to gall the leg by causing it to work about. The size of chain to be used is of 5-16ths, 3-8ths, and 7-16ths, weighing respectively 1 lb. 2¾ oz., 1½ lb., and 2½ lbs., to the running foot.[1] As a rule, for the guidance of jailers, the

[1] P.S.—Chains of 3-16ths and ¼ inch have been lately procured, and chains of ¼ and 5-16ths and ⅜ will be regarded as the ordinary light, medium and heavy sizes, 5-16ths and 7-16ths being exceptional.

heaviest iron is not to be used, except in case of prisoners who have escaped, or when especially ordered by the officer in charge of the jail, in consideration of the general character of the prisoner. The medium weight irons are to be applied in all cases of prisoners sentenced to more than two years' imprisonment, and the lightest irons in cases where the prisoners are sentenced to less than two years, or where two-thirds of a sentence have been fulfilled. In all cases the imposition of lighter or heavier irons is discretionary with the Judicial or Magisterial Officer in charge. In case of convicts transferred to working gangs, the lightest iron only is to be used. Bar irons and neck chains are not to be used, except in case of desperate characters for the purpose of restraint.

2. As a general rule, irons are not to be placed on any but convicts sentenced to imprisonment in irons; but in cases of security prisoners, or even of prisoners committed, it is discretionary with the officer in charge to order their use as a measure of precaution, recording in each case his reasons for the same.

3. Prisoners sent from the jail to the Court, and generally all prisoners, who may not be in irons, when outside the walls, may, if it be thought necessary, be sent with handcuffs, such handcuffs to be of iron secured by a lock or screw, or other temporary fastenings.

4. Irons shall not be removed from any prisoner, without written orders from the officer in charge, except in case of illness or accident precluding the possibility of previous reference, when the removal shall be immediately reported.

5. When prisoners are removed from station to station, or where prisoners of desperate character, or those who have escaped, are confined in insecure places, a chain or bar may be run through the chains of two or more prisoners, but in no case are prisoners confined in thatched or other inflammable buildings to be so restrained.

Convict Labour.

1. Ablebodied prisoners, sentenced to hard labour, on the public roads, or other public works, are invariably to be employed in large gangs (at hard labour), during one-third of their sentence, and such persons, except in case of certified inability for such labour, are not to be employed at light work, or in small detached parties.

2. Prisoners who have been well-conducted, during two-thirds of their sentence, may be employed as occasion requires, and, if thought desirable, they may be employed as maistries over working parties, and as ward maistries, receiving a small increase to the allowance of condiment.

3. Where means exist for putting prisoners to hard labour, within the precincts of a jail, no prisoner shall be permitted beyond the bounds, or to have intercourse with persons outside, except on leave, specially granted by the officer in charge, during the first year of his term.

4. Prisoners sentenced from the same gang shall, as far as circumstances allow, be confined in distinct wards, and employed in separate gangs.

5. In all practicable cases, task work shall be assigned, in ordinary soils. A subdivision of eight men should dig and carry 16 cubic yards to any distance under 40 yards.

Clothing of Prisoners.

Already quoted in the Chapter on Clothing of Prisoners, paragraph 208.

Diet.

1. The diet of the jails will be limited according to the rule laid down by the Foujdaree Udalut, 5th April, 1850, excepting that the maximum rate then proposed, but now generally abandoned, will be disused, and any excess over the ordinary rate

restricted to cases in which such excessive diet is prescribed by the Medical Officer, and this will be accounted for as a medical extra.

2. Officers in charge of jails should invariably have recourse to the cheaper and most ordinary grains in common use. The diet of each jail will be regulated by the officer in charge, in communication with the Zillah Surgeon, subject to the approval of the Inspector, though temporary changes, consequent on any outbreak of sickness, deficiency in supply, or deterioration in the quality of grain, may be necessary.

3. Condiment should be purchased wholesale, and prepared for use in the jail, and issued at a certain rate daily.

4. Officers in charge of jails will make such arrangements as may be most advantageous for supplying the grain to the prisoners, either by contracting at the best season, or by laying in a stock sufficient for the year's consumption, or otherwise. The accounts of expenditure will be made up monthly, and the account of profit or loss made up after measuring the stock on hand at the end of the official year and brought to account. All surplus will be charged at the rate of purchase in the accounts for the following year, and the advance formerly taken adjusted.

5. The Inspector will be prepared to recommend the erection of granaries in all jails which are likely to be retained as such, or, should it appear desirable to convert existing wards into granaries, to suggest the erection of other wards in lieu of those given up, provided advantages justify the expense.

6. Officers in charge of jails are not to have recourse to the Revenue and Police authorities either to aid them in the purchase of grain, or to enforce the fulfilment of a contract. This rule, however, is not intended to prohibit the purchase of grain received by Collectors, as rent, when this is received in kind.

7. Similar arrangements should be made for the supply of condiment, fire-wood, &c., such as may be stored being purchased at wholesale rates, in the cheapest market, when satisfactory contracts cannot be obtained.

8. The use of luxuries, as betel, tobacco, opium, &c., is strictly prohibited; when ordered by the Medical Officer, they will be issued under his orders as medicine and charged for in the bill for medical extras, certified by him.

9. All rations to convicts and prisoners held to security will be issued ready cooked. Officers in charge will, as far as may be consistent with proper discipline, arrange that the cooks are of the classes from whom natives generally will take food, but this is not intended to warrant the employment of an unnecessary number of prisoners in that work.

See Circular 32 B, 4th June, 1857.

10. All meals are to be eaten, by convicts and prisoners held to security, in the place appointed, within the walls. No meals are to be carried outside, nor is any criminal prisoner to be allowed to go outside, to take his meals, under any pretence whatever.

11. Officers in charge of jails will exercise their own discretion in permitting any indulgence, in regard to food, to prisoners under trial and civil defaulters, but without their sanction, no person is to be permitted to take his meals outside the precincts of a jail, or to receive food from without. When any prisoner, under trial, is provided with food by his friends, under his permission, no ration whatever is to be issued or charged for him.

12. European prisoners, detained in any jail, will be supported, if at hard labour, at a cost not exceeding four annas a day; when sentenced to imprisonment, without labour, the scale of diet directed by the Secretary of State for the English Prisons has been ordered to be adopted, with such variations as a difference in products requires.

IN EVERY PRISON'S OFFICE SHALL BE KEPT :—

1. *A General Register of all Prisoners admitted.*
2. *A Register of Convicts.*
3. *A Register of Prisoners confined in default of finding Security.*
4. *The Jail Diary*, which should contain all matter relative to the admission and release of prisoners, infliction of corporal punishment, collection of fines, issue of provisions or clothing, the appointment or dismissal of guards or others on the jail

establishment, the imposition of fines or other punishment, outbreaks of disease, deaths of prisoners or guards, the white-washing or repair of the jail, visits of the officer in charge, and other notices which used to appear in the Court Diary, or which it may be desirable to record. Where letters are written or orders issued, on matters connected with the jail, a note of them should appear in the diary, which should be kept in the office of the Subordinate Judge, or other officer in charge, and will be exclusive of the daily report of labour, &c., kept by the Jailer.

5. *Visitors' Book.*

6. *A Rough Order Book,* in double column, in which any orders to the Jailer required to be in writing should be entered on one side, the return being on the opposite.

7. *A Day Book,* showing the number of prisoners of each class in jail, their distribution and employment, the number of rations of each class drawn, the distribution of the working guard, the work on which each gang was employed, and the amount done, the number of sick, &c.

8. *An Inventory of Tools or Stores,* to be revised annually.

9. In the hospital will be kept, besides such returns as the Medical Board may direct, *A General Register of Vaccinations.*

Manufactures.

1. When practicable, manufactures shall be introduced into jails with the view to the employment, within the walls, of the whole, or any portion of the prisoners.

2. Such manufactures should be preferred as do not materially interfere with existing branches of industry at the place, either by enhancing the price of raw material, or by interfering with the sale of the manufactured article. This rule, however, is not intended to apply to the production of articles required for jail use, or for other Government demands.

3. Such manufactures should be avoided as necessarily require the employment of a large number of persons in light work (as reeling thread, &c.)

4. In general those trades should be preferred which involve such a degree of bodily exertion as amounts to hard labour (as cayar mat and gunny weaving, cumbly weaving, &c.)

5. Whenever any branch of industry is introduced into a jail, it will be advisable to adopt, as far as may be practicable, improved methods of working and simple but effective machinery; it will also be desirable to limit the number of distinct occupations in each jail.

6. In determining the best manufactures to introduce, the facilities for obtaining the raw material and of disposing of the finished article must be considered.

7. In case a quarry, brick field or tannery should be found a desirable object on which to employ the prisoners, sufficient space should be securely fenced off for the purpose. All wood, bark, husk and other articles, required for use, should be deposited, by contractors, outside the enclosure, and every means should be taken to preclude communication with the prisoners.

8. In no case are prisoners to be sent into towns or to houses to bring material or deliver the manufactured article to private purchasers. In the case of brick, hewn stone or other large and heavy articles, a depôt, outside the workshed, is to be established to which the articles are to be conveyed and stacked by prisoners. Purchasers will remove the articles thence at their own cost and risk in the absence of the prisoners.

9. The accounts of manufactures shall be kept distinct from the jail accounts, and an annual account be closed on the 30th April of each year.

10. The superintendence and management of the manufactory may, with the sanction of the Inspector, be vested in a skilled overseer, engaged for the purpose, and paid out of the profits of the manufactory, either by a fixed salary, or by a percentage, or by both.

11. Samples of the articles manufactured shall be kept, and the work throughout be kept up equal to the sample.

12. An exact account shall be kept of the issue of raw material and cost of production of each article manufactured.

13. In case of any prisoner showing particular aptitude and diligence, the officer in charge of the jail may recommend him

for a reward, on discharge; such reward to be charged against the profits.

14. The Jailer, or other paid officer of the establishment is not, without the Inspector's special sanction, to be allowed a commission on sales.

15. The manufacture of unusual articles of small value and in small quantity, to order, should be avoided, unless, as an experiment, with a fair prospect of a large demand.

16. All labour should be tasked.

17. The use of expensive English tools for ordinary work will be discouraged.

18. Annual returns shall be made of,—

(i.) The building and machinery (plant) used in the manufacture, its condition, original cost, and probable depreciation.

(ii.) The stock on hand, its cost price, and depreciation from damage or other causes.

(iii.) The annual account of purchases, and other expenses and receipts, including in the former the stock on hand in the beginning of the year, and in the latter, the stock remaining at the close of the year, both of raw material and manufactured goods.

(iv.) The net annual returns, excluding value of labour. The number of days' labour of each class of artificer, expended on the manufacture, during the year, will be appended to this statement.

Subjoined are the Rules for the guidance of Medical Officers in Charge of Prisons in the Punjab, taken from Dr. C. Hathaway's *Manual*, published under Authority (1858).

Medical Officer.

208. The Medical Officer in charge of the Jail is required to visit the Jail Hospital and solitary cells daily (Sundays excepted). He should carefully examine the state of those placed in solitary confinement, reporting at once the necessity of any convict to be removed on grounds of physical or mental infirmity.

209. He is required to inspect all the prisoners on Monday morning, in company with the Magistrate, and to examine the wheat and other provisions tendered for the use of the prisoners, which should be for a full week's supply in advance; all bad grain, whether damaged by wet or insects, dirty, or mixed with other grains and impurities, should be condemned.

210. The state of the cooking pots, whether properly tinned or perfectly clean, the appearance of the drinking vessels and water, the prisoners' clothing and bedding, if in good repair and sufficient for the season of the year, the cleanliness of the Jail wards and necessaries, and especially the ventilation of the sleeping barracks, and the number contained in each, should be noticed, and reported in the Jail Minute Book.

211. Every prisoner confined in a solitary cell, should have 1,365 cubic feet of space, calculated by measuring the length, breadth, and height of the cell, and multiplying the dimensions together. Thus $13 \times 7 \times 15 = 1{,}365$ cubic feet.

212. Every prisoner confined in hospital should be allowed not less than 600 cubic feet, and no sleeping ward should con-

tain a greater number of prisoners than what will admit of each man having 400 cubic feet of space.

213. Every sleeping barrack should have openings in the roof, or upper part of the walls, of 12 to 18 inches in diameter, at the distance of every 10 feet.

214. There are no two causes that tend to keep up sickness and mortality in our Jails, so much as over-crowding and deficient ventilation.

215. At his daily visit to the Jail, the appearance of the vegetables supplied to the whole bulk of the prisoners, and the perfect absence of husks or coarse particles, either in the flour or bread, should be regularly and thoroughly ascertained; and all articles of extra diet furnished to the patients in hospital, such as milk, meat, &c., should be brought into the Jail sufficiently early to be examined, and either approved of, or rejected.

216. The Medical Officer is required to view the body of every prisoner dying in Jail, before it is removed for the purpose of burial, and to certify to that effect, at the time, in the "Register of Releases."

217. The name of the deceased prisoner should be furnished to him by the Darogah, and written by the Surgeon in the final column, as a check against the possibility of error or fraud, on the part of any of the jail subordinates.

218. All subjects connected with the general health of the prisoners (not merely those sick in hospital), come within the jurisdiction of the Medical Officer; such as the kind of labour assigned to the inmates of the Jail, the hours of work, the possible existence of malaria caused by want of drainage, or rank vegetation near the prison walls, the state of the burial ground, which is ordered to be formed in the vicinity of every jail, the state of the drains and wells inside the prison area, and the floor of the barracks on which the convicts sleep at night.

219. The first symptoms of scurvy should be most carefully watched for, and vigorous measures taken at once to check its increase.

220. In such cases, the Medical Officer has power to recommend an alteration of diet for all those prisoners who seem to be affected, as also the temporary or permanent release of any

prisoner, whose further incarceration in jail would be attended by death.

221. Prisoners are required to be examined by the Medical Officer both on admission and when transferred to, or received from, another jail; the form of descriptive roll and certificate prescribed in these cases is to be strictly adhered to.

222. The convalescent gang, and those prisoners who, from ulcers or other medical reasons, require their irons to be removed (which should always be replaced *before* quitting hospital), require the Surgeon's close attention, every prisoner's name being duly attested by him in the books kept for that purpose. Without great care on this point, many prisoners will improperly obtain the benefit of one or other of these privileges, through the collusion of the guards.

MISCELLANEOUS EXTRACTS.

No one should be allowed to join this (the convalescent) gang, except on the written order of the Medical Officer, the names being kept in a book assigned for this purpose, and which will require examination and correction, from time to time, as the prisoners recover or are released.

A Burkundauze is specially ordered to be present in the Jail Hospital, both by night and day.

Stationery required for Jail Hospitals is to be supplied by district officers according to the scale furnished. It is most important that the Medical Officer should enter the date of his visit in the Visitor's Book, and his remarks on the condition of the prisoners and jails, &c., in the Minute Book.

THE END.

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CONTENTS.

	PAGE		PAGE
Works in the Press	2, 3	Naval and Military	16
Art (Works of Mr. Ruskin)	4, 5	Legal	17
Voyages and Travels	6–8	Fiction	18
Biography	9, 10	Recent Publications	19–27
Religious	11	Cheap Series	28, 29
Miscellaneous	12	Juvenile and Educational	30, 31
India and the East	13–15	Poetry	31, 32

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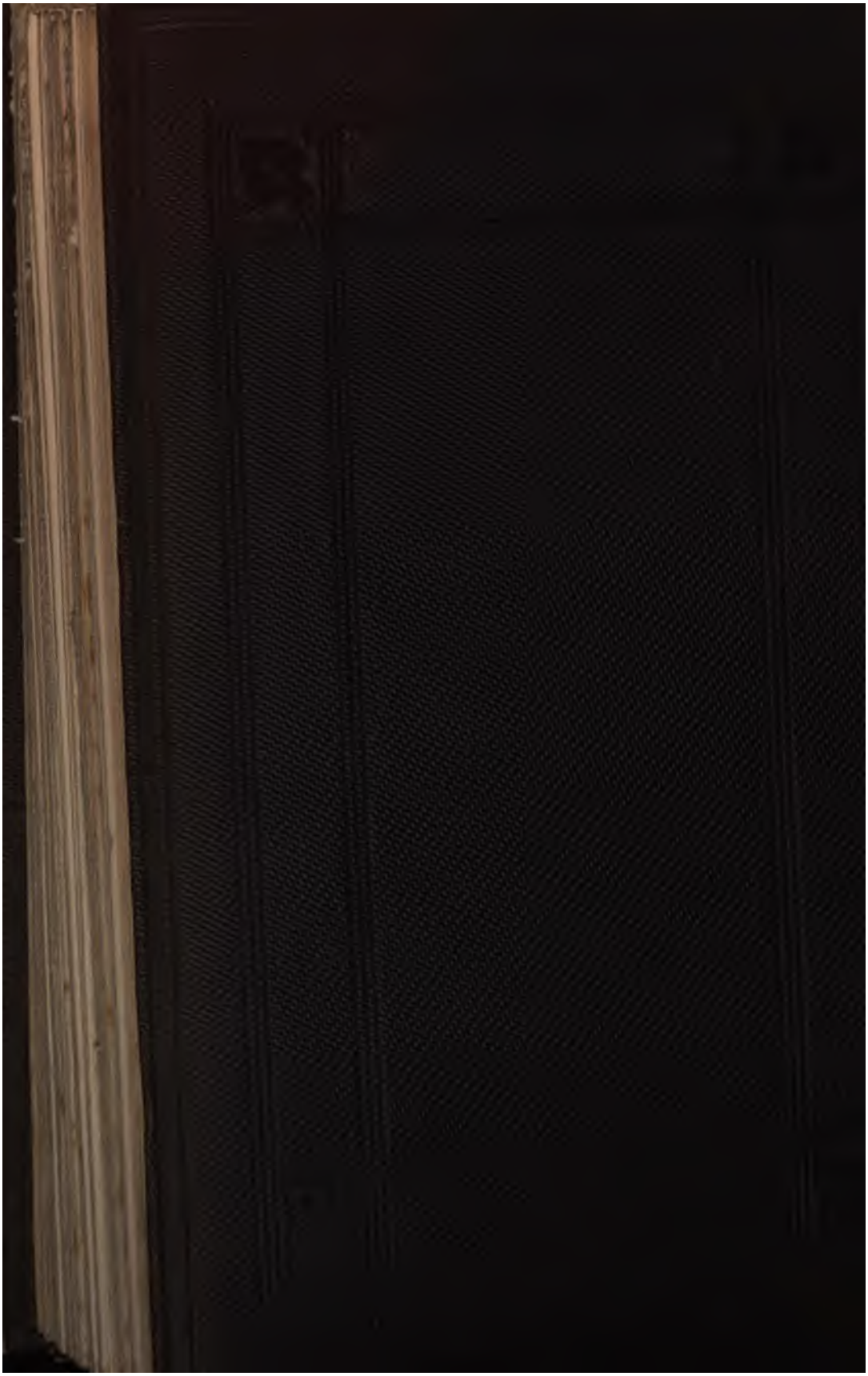
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